ADDRESSES AND ORIGINAL ARTICLES

CERTAIN ASPECTS OF CORONARY THROMBOSIS *

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In this century there have been two notable advances in cardiology: first, the recognition of auricular fibrillation; and secondly, the perception of coronary infarction as the pathological basis of one type of anginal pain—the "status anginosus." I propose here to deal with certain aspects of the latter.

As knowledge of one disease increases the viewpoint of the clinical observer tends to change. There is at first the thrill of the recognition of a new clinical entity and pleasure is found in the full and detailed description not only of the clinical manifestations but also in the correlation of the pathological lesions underlying and responsible for those manifestations. Attention is focused, data are multiplied, and slowly a well-cut picture emerges, so clear that when the condition is present, a diagnosis can be made with confidence, hardly requiring confirmation by autopsy.

On the fringe of this group of well-defined examples of the full-blown stark malady are others in which one or other essential symptom is either absent or much modified; the picture is blurred. There are variations both quantitative and qualitative in the clinical manifestations, so much so that at times diagnosis becomes almost impossible, or at best difficult. In such patients, if autopsy offers, there is present, nevertheless, the fundamental and critical lesion—giving a true interpretation of the eccentric manifestations.

In the face of these findings, the viewpoint of the observer tends to change, and attention moves from the typical to the atypical, from the obvious to the bizarre.

The writings of Herrick, dating from 1912,[1 2] Libman,[3] Levine and Tranter,[4] Pardee,[5] Longcope,[6] and Wearn,[7] focused attention on coronary thrombosis, and it is a pleasure here to acknowledge our debt to American medicine in this matter. From 1920 onwards there has been a spate of valuable papers including those by Levine and Brown,[8] Wolff and White,[9] Christian,[10] Gibson,[11] McNee,[12] Parkinson,[13] Bedford,[14 15] and Lewis.[16] As a result of this intensive attack we have now a clear picture. We are cognisant of the type and site of the pain, the element of collapse, the nausea and vomiting, the pyrexia, the occasional pericarditis, and the specific and characteristic electrocardiogram; we know the pathological lesion and it is unlikely that such a clinical picture will now escape recognition. But even so early as 1912, Herrick [1] drew attention to the importance of the group of "non-fatal cases with mild symptoms." Their recognition is essential, and it is necessary that the criteria on which to base a diagnosis should be defined as sharply as possible.

The atypical cases fall roughly into two classes: one in which the dominant symptoms are apparently not cardiac and therefore misleading; and one in which the symptoms are similar to those in the major attack but less severe—at times so slight as hardly to arrest attention.

That there must be all grades of severity in the clinical manifestations of coronary infarction is to be expected, bearing in mind the character of the coronary circulation and remembering that the myocardium varies greatly in its integrity. Other things being equal, the results depend on the level in the coronary artery at which the block occurs; for the greater the mass of the myocardium suddenly rendered ischæmic and put out of commission, the more severe will be the clinical disturbance. Again, a relatively healthy myocardium is more likely to recover than one already the seat of diffuse fibrosis; and variation in the collateral anastomosis introduces yet another factor. It follows that there must be all degrees from the mildest disability to the lethal attack.

In every case of coronary thrombosis, however, there has been a "cardiac accident," a lesion resulting in the death of muscle-fibres and, in the event of recovery, fibrosis.

That the significance of the symptoms should be appreciated and the nature of the underlying pathological lesion recognised is of importance, not only because of its bearing on prognosis, but also because the immediate treatment and the handling of the patient is an important factor in determining success or failure. It is well then to consider carefully the evidence which justifies a diagnosis of coronary occlusion in these mild, atypical, and aberrant cases, and then discuss how far this provisional diagnosis, possibly made on rather scanty clinical data, can be substantiated by an electrocardiogram or by the subsequent clinical history.

The Atypical Case

At the onset, in the atypical, mild, or minimal thrombosis, *pain* is usually present. Does its character afford a clue to the nature of the attack? It is, of course, anginal in type—persistent, continuous, and usually sternal in site, with the recognised lines of radiation. In its intensity it may be mild, nothing more than an ache or sense of bursting or oppression. The important and characteristic features are, however, two: (1) it frequently arises spontaneously, and (2) it persists in spite of rest.

In spasmodic angina, pain is significantly the outcome of either physical effort or emotion, and it soon subsides and disappears with repose and mental calm. The ache or pain of a coronary infarct persists, is peculiarly resistant to morphia, and is measured not by minutes but by hours. This is characteristic and in itself should arouse suspicion. It is not the severity of the pain but the fact that it continues which is of significance.

In angina of effort, amyl nitrite cuts short the pain and after the immediate relief it is unusual for the pain to recur. In contrast to this, we find in coronary thrombosis that even if amyl nitrite affords some slight amelioration this is only temporary and in a few minutes the pain is as marked as before.

Accompanying the pain there is usually restlessness and often respiratory distress, both of which are unusual in spasmodic angina. In the milder attacks, when the pain is only of moderate intensity, the patient frequently feels ill, "done," and exhausted; he is often inexplicably apprehensive, and nausea and vomiting sometimes occur. Symptoms such as these suggest the presence of a coronary infarction. They differ essentially from those of spasmodic angina both in their duration and their response to treatment.

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* The St. Cyres lecture for 1933, delivered at the National Hospital for Diseases of the Heart, London, on June 13th.

In the mildest cases the distress may be so slight that its significance is overlooked. When and if, however, the incidence of cardiac pain, without apparent exciting cause, arouses suspicion, then a careful search for corroborative signs must be made, such as typical changes in the electrocardiogram, slight pyrexia, transient pericardial friction, and a moderate leucocytosis. It is well to remember that moderate mild pain such as the above may persist and recur for some days or even weeks, to culminate in a major attack. The pain is then prodromal, the first grumblings of the storm, which breaks later. On the other hand slight pain may be the only *immediate* manifestation of a small infarction, and fail to attract attention.

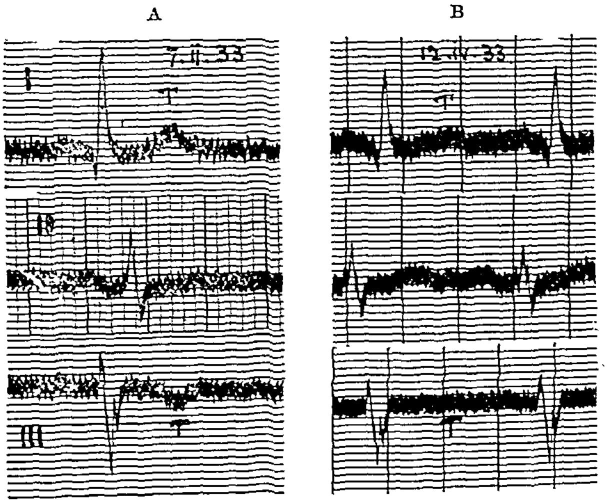


FIG. 1.—(A) Six weeks after C.T.; T inverted in lead III. (B) Fifteen weeks after C.T.; note change in T.

In the type of case above described the variation is essentially quantitative rather than qualitative. There is another group in which the symptoms are berrant and in which the clinical findings are undoubtedly misleading. In these the variations are qualitative. Certain subdivisions at once suggest themselves, in which the dominant features are one or more of the following: dyspnœa, symptoms suggesting the "acute abdomen," collapse and/or syncope.

When there is doubt, careful cross-examination may reveal the significant character of the prodromal symptoms.

Pain being the salient feature of coronary infarction we are apt to forget that it may be insignificant or entirely absent. Experience has shown that this *more frequently happens in a second attack* or when the infarction occurs in patients with a damaged myocardium already suffering from cardiac failure. This aspect of coronary infarction was investigated by Nathan Smith Davis,[17] who published the findings in 76 patients suffering from coronary thrombosis who came to autopsy.

36 (or 47 per cent.) gave a clear history of pain.
29 (or 38 per cent.) had not suffered from pain.
11 (or 15 per cent.) died suddenly.

These figures are arresting for they throw light on the less obvious side of the clinical picture.

In the absence of pain, the outstanding clinical manifestations which indicate a coronary infarct are two—*dyspnœa* and *shock*. The picture varies, but the sudden and spontaneous onset of dyspn either continuous or in paroxysms, is suggestive more particularly if it is not clearly benefited by re Again, a sudden and inexplicable collapse with drop in the blood pressure may be the first *indicati* of the cardiac accident. "Waves of faintness overwhelm the patient; his face is pale, ashen, a moist with cold sweat. This was the characterist feature of the second attack in a case which I sh shortly relate.

It is the suddenness and the spontaneity of t dyspnœa and the collapse which are significant of coronary block. Syncopal attacks are occasionall though rarely, the dominant feature in a seizur Bell and Pardee[19] describe such a case in which sudden syncope ushered in an attack of coronar thrombosis. This was preceded for three days b prodromal symptoms, a consciousness of "a heav weight resting on the epigastrium."

CASE 1.—Male, aged 60. No previous illness, bu admits to intermittent claudication and occasional gidd ness without apparent cause. His doctor states: "Th onset occurred when patient was sitting in his chai (Nov. 26th, 1932). He suddenly felt very ill and collapse with severe pain between the shoulders, and in a fe minutes lost consciousness. On recovery there wa agonising pain in both arms and across the chest." little later during the course of examination the docto noted slowing and then cessation of the heart beat. Th patient's jaw dropped. He was laid on the floor, hi chest was vigorously pummelled, and adrenaline an pituitrin were injected. His blood pressure immediatel preceding syncope was 107/70 mm. Hg. It rose in thre days to 130/90. No history of any vomiting or dyspnœa Ten days later while in bed there was a third attack o syncope preceded and followed by the sensation of impend ing death. Pain in the arms had been constant from th onset, and the third seizure was characterised by a grea increase in the pain across the chest, "like a bar," ending in loss of consciousness.

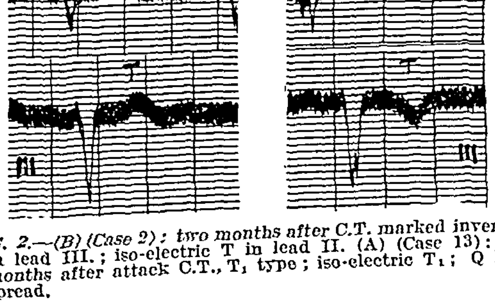


FIG. 2.—(B) (Case 2): two months after C.T. marked inversion in lead III.; iso-electric T in lead II. (A) (Case 13): five *months* after attack C.T., T_1 type; iso-electric T_1; QRS spread.

He consulted me six weeks from the onset. Examination did not reveal any evidence of disease of the heart, lungs, or abdomen. The blood pressure (B.P.) was 130/80, and the heart-rate (H.R.) 75. An electrocardiogram (E.C.G.) taken on Feb. 7th, 1933, six weeks after the attack, showed the T_3 type of coronary occlusion (Fig. 1A). An E.C.G. on April 12th, nine weeks later, showed rapid improvement in T_3 (Fig. 1B).

CASE 2.—Male, aged 52, schoolmaster. In 1928, when golfing, he felt suddenly faint, and his B.P. [illegible]s found to be 185 systolic. His attack occurred on Feb. 3rd, 1933, but for three months prior to this he had had slight "effort angina," lasting two or three minutes. When walking quietly back from school he felt a sudden acute pain above the level of the nipples. This pain did not radiate. It lasted from 4.30 to 9 P.M., being relieved by morphia. There was a persistent dull ache for three days. During the attack he was restless and tossed about; he had nausea and vomiting.

On Feb. 17th, when he was first seen by me, there was slight enlargement of the heart. A short systolic over aortic area; A_2 accentuated; M_1 rather booming; no bruits. B.P., 225/120; H.R., 104; arterio-sclerosis; arteries thick and tortuous; no evidence of dilatation of the aorta. On March 3rd he was feeling much better and had had no recurrence of pain. Walked up Mount Pleasant, a stiff gradient, in comfort. No bruits. B.P., 215/120. Electrocardiography (fundamental rhythm normal) showed Q R S split in all leads and slightly spread; T_2 flat; T_3 markedly inverted (Fig. 2B). This record was obtained two months after the coronary thrombosis.

A more common difficulty is the case of coronary thrombosis which simulates the acute abdomen. This has been so well described by Levine, Wolff, White, Gibson, Parkinson, and others, that the condition is now less liable to escape recognition. The combination of pain in the upper abdomen, often localised to the epigastrium with rigidity of the abdominal muscles, the vomiting, collapse, and rapid small pulse, with pyrexia and leucocytosis, simulates only too well one of several serious abdominal lesions. Thus cases have been diagnosed as acute pancreatitis, perforation of duodenal or gastric ulcer, gall-stone colic, and cholecystitis. Fortunately for the physician, however, dyspnœa is often present in coronary infarction, and since it is rare in acute abdominal lesions, this has a definite diagnostic value.

Diagnosis through Complications

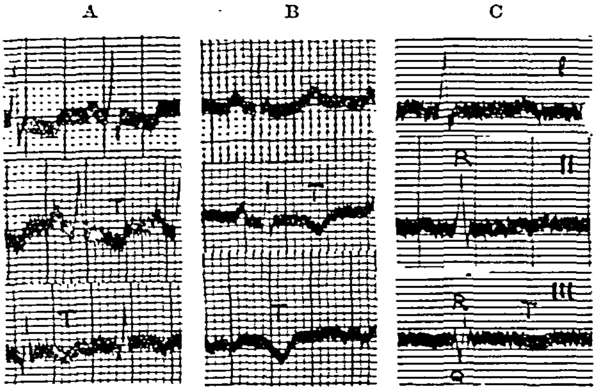
There is a further group in which the arresting symptom is, in a sense, secondary to the infarction, and there are certain conditions in which, in the absence of an obvious cause, it is well to bear coronary infarction in mind. The following case for example was one of cerebral embolism occurring in a patient who did not present either auricular fibrillation or valvular disease of the heart.

CASE 3.—On Jan. 1st, 1931, I was asked to see a woman, aged 56, said to be suffering from cerebral hæmorrhage. She had previously consulted me in May, 1930, at the heart clinic, complaining of dyspnœa and a dull heavy sensation across the sternum. At that time her B.P. was 225/115; H.R., 76. There was definite arterio-sclerosis and emphysema. The hemiplegia had occurred in her sleep during the night of Dec. 27th, 1930, and on examination she presented the typical findings of left cerebral embolism. There was a significant drop in the B.P. to 145/90, and a short pericardial rub was audible. On obtaining the following history it was evident that coronary thrombosis was the essential lesion. She had been suddenly seized on Dec. 19th by excruciating pain across the chest and down the left arm, which persisted for five hours. Twelve hours later the pain recurred for a similar period and again next day. Six days later the hemiplegia developed. In hospital she ran a temperature of 100° to 104° F. for two days; pericardial rub over the heart persisted for a day or two and the blood showed a leucocytosis of 13,400.

On Jan. 12th, 1931, the B.P. fell to 105/80, and the lowest level was 95/75 on Feb. 12th. On Jan. 16th, four weeks *after the coronary thrombosis, there was sudden* pain in the right chest, followed by pyrexia for four days, hæmoptysis, and a dry pleural rub. The E.C.G. on Feb. 27th was of the T_3 type. She slowly recovered, and was discharged on March 9th, free from pain and dyspnœa, with normal speech and the paresis almost entirely gone.

Again, pulmonary embolism may be simulated by coronary thrombosis.

CASE 4.—Female, aged 50. Operation by gynæcologist on Feb. 19th, 1932. Ten days later (Feb. 29th) suddenly and seriously ill. Pain in chest; collapsed; moist sounds in chest; slight hæmoptysis and pyrexia. A diagnosis of pulmonary embolism was made by her medical attendant. The fact that there was some tenderness in the calf of one leg, suggesting phlebitis, lent colour to this diagnosis. When she was seen by me a few days later, however, a more detailed description of the attack and the nature of the pain suggested the probability of a coronary infarction. On March 3rd the E.C.G. showed early evidence of cardiac thrombosis (C.T.) (Fig. 3A); on the 14th there was a marked T_3 type of C.T. (Fig. 3B); and on the 15th T_3 was almost normal, with very low voltage (Fig. 3C). Note very slight evidence of C.T. 3½ months later, but T flattened out in all leads and presence of Q_3.



3 days. 14 days. 14 weeks.

FIG. 3. (Case 4).—(A) Early R–T changes. (B) Developed T_2 and T_3 inversion. (C) Flattening of T in all leads; voltage low.

We are all familiar with the fact that the inception of a pathological rhythm may be the direct outcome of an infarction—i.e., auricular fibrillation, flutter, or heart-block. Or the infarct may prove to be the factor which initiates progressive cardiac failure, especially in patients with a high blood pressure.

Clinical Grounds for the Diagnosis

On reviewing this picture it is obvious that difficulties of diagnosis may arise either because the symptoms are so mild, or because the pain is abdominal in site, or indeed because pain is absent and replaced by some other symptom such as dyspnœa or syncope. Another pitfall is that the initial infarct may escape recognition under cover of some complication of the coronary thrombosis. The important thing in such cases is to be alive to the possibility of a coronary thrombosis being the primary and essential lesion. Suspicion being aroused, what information will be of value as an aid to decision?

Before venturing on a positive diagnosis a consideration of the following facts is of value:—

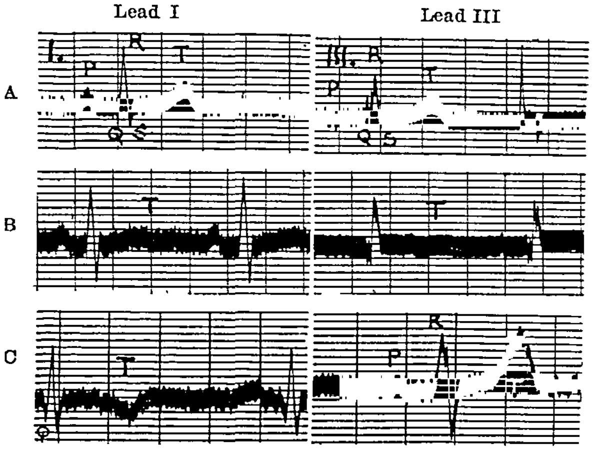
Coronary infarction is rare under the age of 40 and is much more likely to occur in men over 50. It is remarkably rare in patients suffering from chronic sclerosing endocarditis of the rheumatic type and in those with cardio-aortic syphilis.

Arterio-sclerosis is the basic predisposing lesion and is to be found in the majority of patients who develop a coronary infarction.

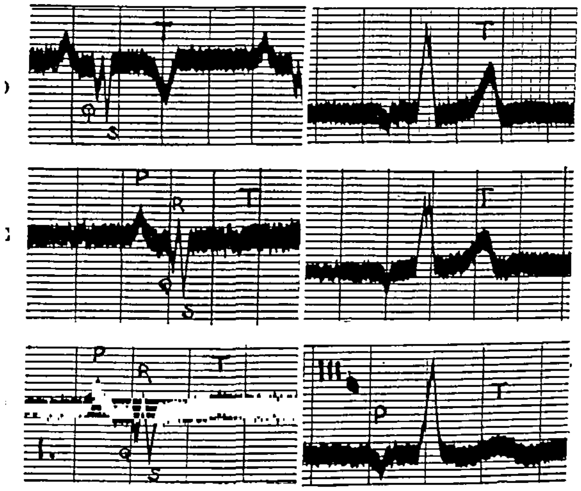
There may be a clear history of a familial tendency to arterio-sclerosis, and cross-examination may reveal the fact that one or more relatives of the patient have died either from angina or from cerebral hæmorrhage.

A high blood pressure is the rule rather than the excep ion, and with the advent of the coronary block there is ısually a sudden drop in the pressure. This fall in pres ure may be great and the finding may never again each its previous level. Such a change is in itself signi icant and suggestive.

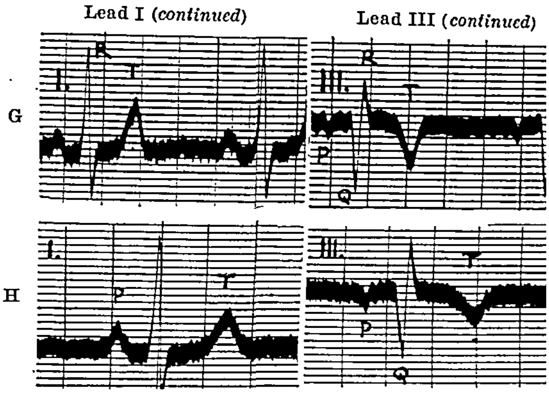
A history of previous attacks of spasmodic angina ven of the minor type can often be elicited, and is of alue in so far as it indicates that the coronaries are lready diseased and narrowed—ripe for an infarction.



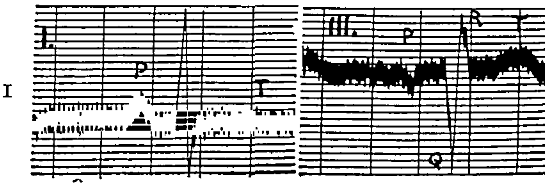
Cardiac thrombosis, August, 1925.



Cardiac thrombosis, October, 1927.



Cardiac thrombosis, June, 1929.



Fatal attack, Nov. 20th, 1929.

FIG. 4 (Case 5).—(A) September, 1913: aged 29; norma record; nodal premature beat. (B) January, 1914: T flat both leads. (C) January, 1923, aged 39: T_1 inversion T_3 pronounced, suggesting a lesion of coronary artery "chronic infarction." (D) October, 1925: aged 41 (two month after first attack of C.T.); typical sharp inversion of T_1 (E) December, 1925 (four months after first attack of C.T.) T_1 now iso-electric; T_3 smaller; Q R S spread and split (F) April, 1926 (seven and a half months after first C.T.): T_1 positive; Q R S split and spread. (G) February, 1928: aged 44 (four months after second C.T.), shows shift from T_1 to T_3 type with deep Q_3. (H) August, 1928 (ten months after second C.T.): negativity of T_3 not so pronounced. (I) August, 1929: aged 45 (two months after third C.T.); T_1 iso-electric; T_3 positive; Q_3 pronounced; shows shift from Type 3 to Type 1.

The Electrocardiogram

So much for the clinical findings, and their import ice is great. Not infrequently, however, with them our only guide we can do no more than suspect ıd turn hopefully to the electrocardiograph. Its nitations must be clearly recognised and as frankly ated.

There are certain electrocardiograms which are themselves almost pathognomonic of coronary farction. We know also that in the course of time weeks, months, years—the electrocardiogram slowly anges as the damaged portion of the myocardium absorbed and scarred. In some patients the records come normal and there is then nothing specific in e electrocardiogram to justify even a suspicion at at some previous moment infarction has occurred. iis is the exception; but it is of interest and portance to know to what extent the electro rdiogram can be of help some months after the ronary occlusion, when the process of repair is ll advanced, no records having been obtained during the intervening period. This is a question wh is apt to arise in practice.

Probably Pardee [20] is correct when he sugge that a certain minimal area of myocardium must involved to affect the electrocardiogram, wh involvement of a lesser area may still cause pa Others have affirmed that there are silent ar in the heart, silent not only as regards the producti of pain but also in their effect on the electrocard graph—silent at any rate with the ordinary leads. Whatever the explanation, it is agreed that a normal electrocardiogram is obtained in a small proportion of cases of undoubted infarction (Pardee,[20] Smith,[21] Parkinson and Bedford [13]). The latter have reported a return to normal in four cases of Type T_1—the periods being 4, 8, 12, and 26 months; two cases of Type T_3—the periods being 8 months in the first case, and almost complete recovery after 12 months in the second. Levy,[22] in reporting eight cases of mild coronary thrombosis, refers to two in which the electrocardiogram returned to normality in 6 and 19 months respectively. In 382 cases of coronary thrombosis reported by Holland and Levine,[23] 35 showed a normal electrocardiogram at one time or other after an attack. In 16 cases of infarction, 3 gave a normal record. The literature contains numerous examples of similar findings.

The less remote from the time of the infarction the less likely is the record to be within normal limits, though such have been obtained within even a few days of the attack—becoming abnormal later. It is probable that if serial records were taken regularly from the onset, very few cases would fail to reveal at one time or another frank, typical, and diagnostic deviations from the normal, but in practice it may only be possible to get a very limited number —sometimes a solitary record and that weeks or months from the onset of the attack.

Approximation to the normal is more likely in the less severe infarcts and in those with a liberal collateral vascular anastomosis. An isolated record which is taken some months after an infarction and only deviates slightly from the normal cannot, therefore, be interpreted as conclusive evidence against a diagnosis of coronary block, and such a record justifies a careful scrutiny of the clinical evidence on which the provisional diagnosis of infarction was based.

The following case presents several points of interest.

CASE 5.—The patient was first seen by me in 1907 at the age of 23, complaining of acid dyspepsia and palpitation on effort. There was no history of rheumatism or other infection, except scarlet fever at 4 years. The heart was markedly enlarged, 6 in. to left of midline. Cardiac thrust in sixth space. No abnormal sounds. No bruits. Heart-rate 52. Marked sinus arrhythmia. B.P. 115. Urine nil.

July, 1913: As the result of vigorous digging he was distressed by palpitation. The deep cardiac dullness had increased, extending 7 in. to left of midline. Soft systolic bruit present over mitral and pulmonary area. B.P., 125/70. *September, 1913:* Cardiac reserve diminished. E.C.G. within normal limits; no abnormal axis deviation. A nodal premature beat in lead III. (Fig. 4A). *January, 1914:* Four months later E.C.G. showed flattening of T in both leads. General condition much the same. B.P., 140/80 (Fig. 4B). During the war he worked hard—not overseas. In 1920 one brother died suddenly of angina pectoris, aged 50. Patient lives within his limitations. *December, 1921:* Heart 6¾ in. to left of midline. No bruits. P_2++. *January, 1923:* E.C.G. showed material changes (Fig. 4C). Very suggestive of a coronary lesion, though there was no history of any serious illness.

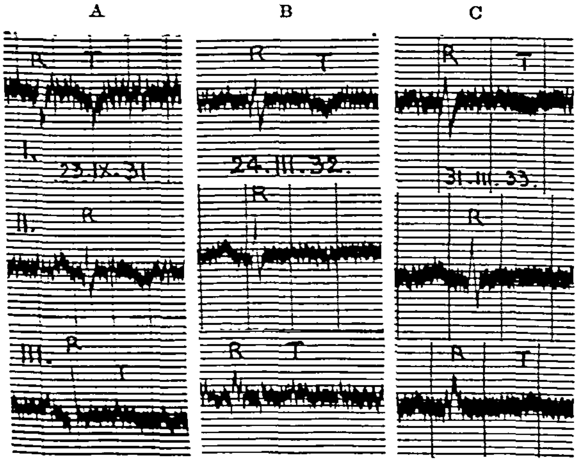


FIG. 5 (Case 6).—(A) Forty-nine days after C.T.; T_1 type, low voltage. (B) Seven and a half months after C.T.; T_1 less inverted; low voltage. (C) Nineteen and a half months after C.T.; T iso-electric all leads; persistent low voltage.

His *first attack* of anginal pain occurred in the middle of August, 1925. There were no prodromal signs; he had been feeling well—golfing and bathing. Since the attack, very liable to effort angina. No change in heart except that deep cardiac dullness was less, 5½ in. to left of mid-sternal line. An E.C.G. on Sept. 3rd, 1925, taken within three weeks of the coronary thrombosis is a frank T_1 type, with Q R S widened and split. Fig. 4D (Oct. 26th, 1925) is similar to that of Sept. 3rd. By December, four months from the attack, he was able to walk half a mile without distress, and was back at business, and the E.C.G. (Fig. 4E) revealed that T_1 was iso-electric, Q R S remaining abnormal. On April 10th, 1926, four months later, and 7½ months from the cardiac thrombosis, T_1 was upright, and the only residual change was to be seen in the Q R S complex. He was still liable to mild attacks of anginal pain. B.P., 135/85 (Fig. 4F).

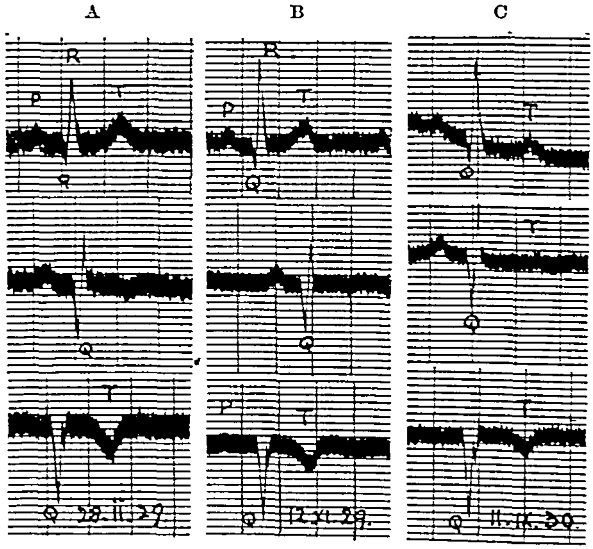


FIG. 6 (Case 7).—(A) Two and a half months after C.T.; T_3 type; Q_3 +. (B) Eleven months after C.T.; T_1 less inverted; T_3 iso-electric; Q_3 +. (C) Twenty-one months after C.T.; T_3 less inverted; Q_3 persistent.

The *second attack* of coronary thrombosis occurred in October, 1927. He collapsed while driving his car, and experienced a sensation of impending death, but little or no pain. "Waves of faintness" recurred during the attack. There was moderate pyrexia for a week. H.R. about 40; cardiac thrust feeble, heart sounds faint, and for two days a pericardial rub. Recovery was slow. While he was convalescing in the south, on Feb. 6th, 1928, Dr. J. M. H. Campbell electrocardiographed him, and his record shows the T_3 type of curve and a deep Q_3 (Fig. 4G). By May he was much better. B.P., 165/100. H.R., 60. Urgent business called him to America and he went. On August 30th, 1928 (Fig. 4H), there was little change in E.C.G., but the record for January, 1929, shows a diminution in size of T_1, and T_3 is less inverted. Q_3 still a marked feature. No further pain except after effort. B.P., 160/95. H.R., 72.

The *third attack,* on June 15th, 1929, was preceded by transient prodromal pain. The pain of the attack was severe and continuous, accompanied by moderate pyrexia for a few days. Two weeks from onset he had discomfort and colicky pain in the right lower quadrant of the abdomen with a recrudescence of the pyrexia. Dr. John Parkinson considered that the symptoms were probably due to infarct into the smaller branches of the mesenteric artery. On August 24th, two weeks after the third attack, he was feeling much better. B.P., 135/90. The E.C.G. showed an iso-electric T_1, and a positive T_3, with no change in Q_3 (Fig. 4I).

He died from a *fourth attack,* Nov. 19th, 1929. This attack was preceded by prodromal pain for three days. There was never any explanation of the gross enlargement of the heart discovered in the early twenties. The slow change in the E.C.G. between 1914 and 1923 (very suggestive of changes in the descending branch of the left coronary) occurred without any arresting symptoms. His recovery from successive attacks was remarkable. It is significant that following the T_1 attack the Q R S remained abnormal, although the T_1 was no longer inverted, and also that Q_3 in the T_3 attack persisted when

T_3 had become positive. The T_3 *attack* gave rise to no pain, though the heart was quite capable of producing pain, as shown by the two following painful seizures.

Familial tendency.—Two brothers died anginal deaths.

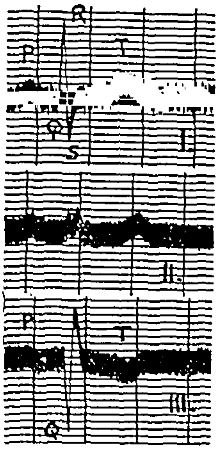


FIG. 7 (Case 8).—T_3 type: showing Q_3+ three years after C.T.

On examining records taken months or even years after an undoubted attack of coronary infarction, certain abnormalities are found which, though not pathognomonic, occur so frequently that they may be regarded as of diagnostic value, and the presence of one or more of these is certainly significant. As the necrotic mass liquefies and is absorbed, and as fibrous tissue takes its place, it is only to be expected that corresponding variations are to be found in the electrocardiogram. The collective experience of cardiologists appears to justify us in attaching importance to certain combinations of findings and regarding them as of value. Of such a nature are the following:—

Persistent low voltage, especially if present in all three leads.

Notching, slurring, and widening of Q R S in more than one lead.

The presence of a well-marked and persistent Q_3.

Persistent slight inversion of T in either leads I. or III., especially lead I.

These findings are suggestive rather than pathognomonic; they occur in other conditions than coronary thrombosis—one or more of them may frequently be seen in diffuse myocardial fibrosis irrespective of any clinical history of coronary thrombosis.

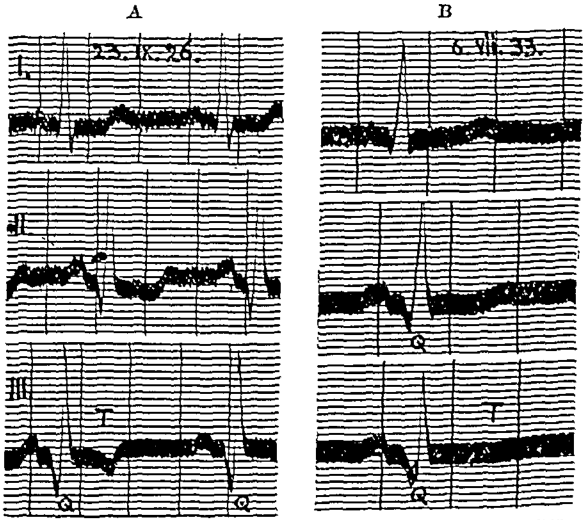


FIG. 8 (Case 9).—(A) Three months after attack of C.T.; Q_2 and Q_3 well marked; T_3 type of C.T. (B) Seven years after first attack of C.T.; six years after second and milder attack; Q_2 and Q_3 persisting; T_3 iso-electric.

The significance of low voltage in all leads, in association with coronary thrombosis, has been stressed by Levine,[8] Wearn,[7] Parkinson,[13] and others, and its persistence is of sufficient frequency to be of importance in diagnosis.

CASE 6.—Male, aged 65. Prodromal symptoms. Effort angina from August 1st to 5th, 1931. Coronary thrombosis, severe type; morphia; duration three days, with pyrexia of 100° F. Heart irregular. Surgical friend anxious to explore abdomen. E.C.G. (Sept. 23rd, 1931), T_1 type (Fig. 5A). B.P., 120/80. Occasional pain along left costal margin. Gradual *improvement.* E.C.G. (March 31st, 1933) (Fig. 5c). Persistent low voltage; T flattened all leads. B.P., 120/80. H.R., 64. General condition much improved; slight tendency to substernal discomfort on effort.

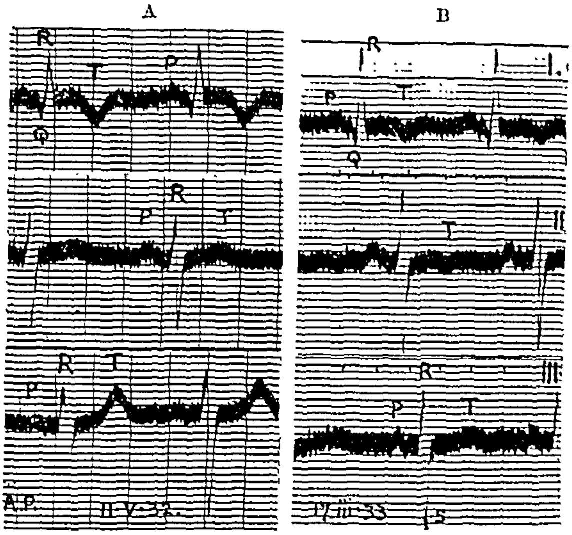


FIG. 9 (Case 10).—(A) Some weeks after C.T.; T_1 type. (B) Eleven months after C.T.; still slight inversion of T_1; Q_1 persisting; flattening of T_3.

Notching, slurring, and widening of Q R S may indicate nothing more than the presence of a diffuse ischæmic fibrosis of the myocardium, but it is not an uncommon accompaniment of coronary infarction and when in addition there is a low voltage and some inversion of T-wave it becomes a sign of value.

In the last few years increasing emphasis has been laid on the presence of a large Q deflection in lead III. in patients suffering from coronary thrombosis. Wilson[24] drew attention to this in 1926. Since then, Bedford, Parkinson, Levine, Pardee,[25] and Levy[22] have all noted its relative frequency in this type of case. According to Pardee a little less than a third of the cases of coronary thrombosis show a definite Q_3, and though its amplitude tends to lessen in the course of time, it is persistent and the continued presence of Q_3 with left axis deviation undoubtedly strengthens a diagnosis of past coronary infarction.†

CASE 7.—Male, aged 48. Keen, active healthy man attacked by severe coronary thrombosis on Dec. 17th, 1928. Preceded for 24 hours by prodromal pain in wrists and lower end of sternum—constant but varying. Feb. 28th, 1929 (two and a half months later): an ache in right wrist if he hurries; heart normal in size and sounds, but M_1+; B.P., 140; E.C.G., T_3 type, Q_2 and Q_3 marked (Fig. 6A). Jan. 19th, 1929: improved; B.P., 110/80; H.R., 80. Nov. 12th: B.P., 130/90 (Fig. 6B). Sept. 11th, 1930: much improved; B.P., 135/100; H.R., 68; still pain in right wrist on effort; E.C.G., T_3 inversion less, Q_2 and Q_3 persist (Fig. 6C).

CASE 8.—Male, aged 65. Gives clear history of attack of C.T. 1930. Previous to this he was well and strong. Since the attack some tendency to effort angina, most marked for the six months subsequent to the C.T. The record shows a persistent well-marked Q_3, and slight inversion of T_3 after three years (Fig. 7).

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† Since the delivery of this address a valuable paper has appeared in Heart (1933, vol. xvi., Nos. 3 and 4), by F. N. Wilson et al., in which reference is made to the importance of a large Q_1 in the T_1 type, and of Q_3 in the T_3 type of coronary occlusion. Emphasis is laid upon the greater persistence of this evidence of occlusion as compared to that of the characteristic changes in the RS-T segment.

CASE 9.—Male, aged 57. June, 1926, when aged 50, a typical attack of C.T. Sept. 23rd, 1926: effort angina; heart not enlarged; X ray normal; B.P., 150/90; H.R., 84; E.C.G., Q_2+, T_2 slightly inverted, Q_3++, T_3 typical inversion. July 22nd, 1927: second attack; short duration of agonising pain with slight hæmoptysis; pain substernal and epigastric. July 6th, 1933: still slight liability to effort angina; general condition good; heart slightly enlarged; B.P., 185/100; E.C.G., T_3 iso-electric, Q_3 split and well marked, Q_2 present (Fig. 8).

During recovery after a cardiac thrombosis the inversion of T in lead I. or III. may gradually approach the iso-electric level or even return to the normal. More often there is a slight persistent inversion, and the significance of this is difficult to assess if one is ignorant of the previous changes, especially in lead III. Inversion of T_3 is no uncommon feature in normal hearts, and also in hearts showing a relative dominance of the right ventricle—right axis deviation—as in some cases of mitral stenosis.

The fact that inversion of T occurs in conditions other than coronary thrombosis is a constant source of difficulty when attempting to evaluate the diagnostic significance of a single electrocardiogram. The difficulty arises from several causes:—

1. In cases with marked left axis deviation it is not uncommon to find inversion of T in lead I., and since hyperpiesia is present in many patients who develop coronary thrombosis this combination is confusing. Also, in aortic stenosis and regurgitation the same tendency to inversion of T_1 is present, with a prolongation of Q R S. Such records may simulate early branch-bundle lesions with biphasic type of curve, but in the latter there is a tendency to splitting or slurring and broadening of the Q R S complex.

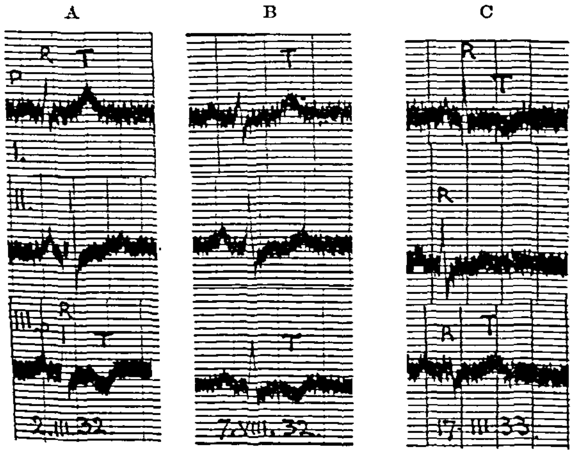

FIG. 10 (Case 11).—(A) Three weeks after C.T.; T_1 type. (B) Six months after C.T.; T_1 much less inverted. (C) Shift to T_1 type following further attacks of C.T.

2. Inversion of T is present in certain disorders of metabolism, more particularly in diabetes and cases of hypothyroidism, though it hardly conforms to the characteristic form of inversion found in coronary infarction.

3. Less likely to cause confusion are patients suffering from pneumonia and toxic states, such as uræmia, where inversion of T has been noted. Digitalis gives its own characteristic inversion.

4. Another possible cause of inversion in T_3 is to be found in a high placed diaphragm.

One other point should be mentioned. Slowly progressive narrowing of a coronary artery is known to give rise to an ischæmia fibrosis and this, as one would expect, may cause a change in the electrocardiogram which is not unlike that resulting from coronary infarction. In such patients there is a stability and permanence in the inversion in contrast to the variations usually noted in the inversions due to infarct.

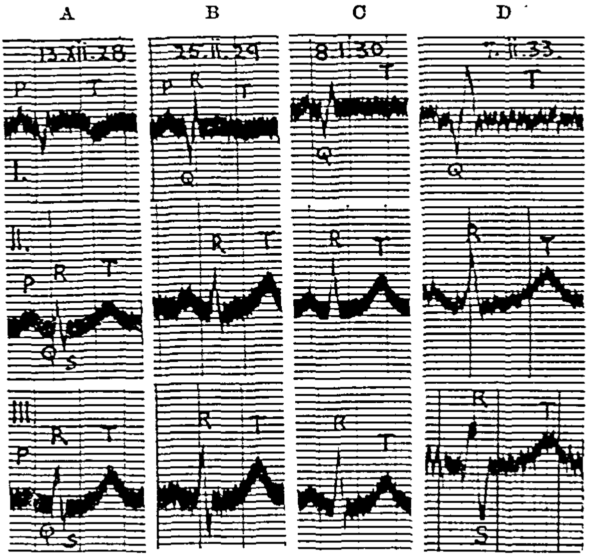

FIG. 11 (Case 12).—(A) Forty-six days after C.T.: T_1 type; low voltage. (B) Two and a half months after C.T.: T_1 flattening; low voltage. (C) Fourteen and a half months after C.T.: T_1 iso-electric. (D) Four years and three months after C.T.: T_1 still iso-electric; voltage remains poor; Q R S spread. In A, B, C, D, Q is present.

I have already referred to the presence of "silent areas" in the heart, giving no indication by the ordinary conventional leads of the existence of coronary infarction. Wolferth and Wood [26] have stressed that these areas are no longer "silent" if appropriate leads are used. They apply Lewis's electrodes to the front and back of the chest, the right wire attached to the anterior electrode, the left to the posterior. This lead they term lead IV. They pointed out to me that in lead IV. the Q deflection is deep and well marked in normal hearts, but in coronary thrombosis of the T_1 type in addition to definite changes in the iso-electric level of RS–T the Q deflection diminishes or disappears, and this feature tends to persist. This may prove to be a sign of value when the three orthodox leads fail to give decisive information.‡

The following brief records are given as exemplifying some of the points to which I have already referred. Their interest lies in the changes which tend to persist.

CASE 10.—Male, aged 65. Coronary thrombosis simulating "acute abdomen" perforation. T_1 inversion after 11 months. Prodromal "suffocating feeling in chest and neck." Three days later sudden agonising pain in epigastrium; restive; surgeon refused operation; gave morphia. Seen with Dr. Wallace Jones, Heart Clinic, May 11th, 1932 (Fig. 9A). March 17th, 1933 (11 months after C.T.): still slight inversion of T_1 (Fig. 9B); heart slightly enlarged; no bruits; A_2+; B.P., 170/120; H.R., 80; arteries very tortuous; slight dyspnœa on exertion.

CASE 11.—Male, aged 61. March, 1930: attack of "influenza"; ill seven weeks. Since then moderate angina of effort. Heart normal in size, slight arteriosclerosis, no bruits; B.P. normal. Worked as a bricklayer until first week in February, 1932. End of first week in February, 1932: *history suggestive of mild coronary thrombosis*; severe pain three-quarters of an hour, with dyspnœa; subsequently anginal pain more easily induced. March 2nd, 1932: E.C.G., T_3 type (Fig. 10A). August 7th: T_3 less inverted (Fig. 10B); cardiac reserve greatly improved. Christmas, 1932, and February, 1933: *sudden severe anginal pain* with angor animi, unrelieved by amyl nitrite; on each occasion awakened by attack. March 17th, 1933: E.C.G. shows *change to T_1 type with low voltage* (Fig. 10C); heart as before, *normal in size; no bruits*; B.P., 125/85.

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‡ In the *American Heart Journal*, June, 1933, p. 595, Katz and Kissin have an interesting paper in which they deal with lead IV. in coronary occlusion.

CASE 12.—Male, aged 66 in 1928. *To show flattening out of T_1 and persistence of Q_3 after 4½ years.* Coronary thrombosis, Oct. 28th, 1928; onset "like a ship striking a rock in a calm sea." Had never been ill, and no discomfort of any kind on exertion. Pyrexia for six days, 100° to 101° F.; pericardial rub at end of 24 hours; vomiting on and off for two days. Dec. 13th, 1928: better, no further pain; heart normal in size; no bruits; M_1 doubled; B.P., 130/85 (Fig. 11A). January, 1930: *began to practise* (Fig. 11C). February, 1933: *steady improvement; can take gradients that used to worry him*; B.P., 125/70 (Fig. 11D).

CASE 13.—Male, aged 55, shopkeeper. *Always vigorous, healthy man.* Father died in anginal attack. Attack of severe coronary thrombosis, Oct. 25th, 1932; agonising pain, seven hours, resistant to morphia and amyl nitrite; collapse, nausea, vomiting. Nov. 10th, 1932: no valvular disease of heart; arteries healthy; B.P., 110/75; advised bed for another month. March 20th, 1933: *feels well, occasional slight tightness across chest on effort; heart sounds short, no bruits*; B.P., 115/80. E.C.G. (*five months after attack*): iso-electric T in lead I.; Q R S broadened and slurred; left axis deviation (Fig. 2A).

CASE 14.—Male, aged 48, newsagent. Towards end of August, 1932, while sitting in tramcar, sudden agonising pain, substernal; apprehensive, restless, and agitated. Duration 24 hours. Subsequently felt ill and exhausted, and effort angina easily induced with pain spreading down inner side of left arm. Oct. 6th, 1932: *size of heart difficult to define; not enlarged; no bruits; heart sounds faint*; B.P., 115/75; E.C.G., Q R S abnormal, T_1 slightly inverted (Fig. 12A). March 24th, 1933: looks well; is back to work; E.C.G., T_1 normal; nothing to indicate previous thrombosis (Fig. 12B).

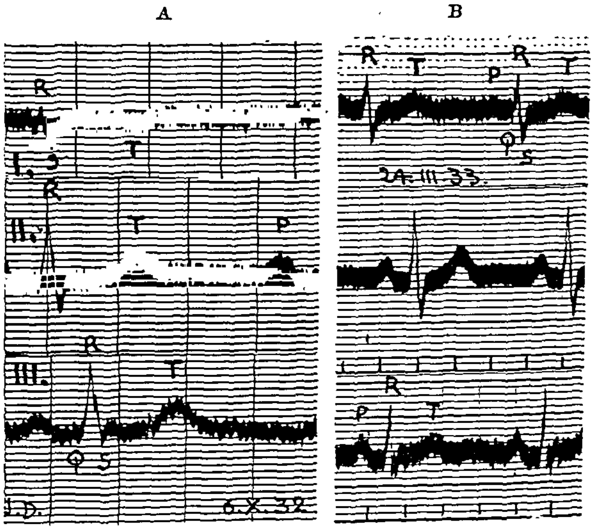

FIG. 12 (Case 14).—(A) Within two weeks of C.T.; T_1 type; slight inversion of T; Q R S abnormal. (B) Seven months after C.T.; nothing to indicate previous damage.

CASE 15.—In October, 1925, when the patient was 55 years old, he began to suffer from effort angina. E.C.G. was normal with left axis deviation; B.P., 120/80; cardiac thrust 5 in. out. Feb. 20th, 1928: sudden agonising pain, *spontaneous*; duration of at least five hours, *probably first attack of coronary thrombosis.* Diminished cardiac reserve since then. Nov. 8th, 1931: attack of coronary thrombosis; onset when in bed; heart sounds distant; slight pyrexia. Under care of Dr. W. Jones. B.P., 140/80. Dec. 18th, 1931: E.C.G., T_3 type, Q_3+ (Fig. 13A). April 15th, 1932: increased liability to angina of effort; E.C.G., T_3 less inverted, Q_3+ (Fig. 13B). *Oct. 26th, 1932*: more dyspnœic; pain on walking; B.P., 125/90. *Dec. 14th, 1932: increasing liability to severe nocturnal dyspnœa; great distress*; no pain; heart enlarged, sounds distant, no bruits; B.P., 120/85; definite pulsus alternans. E.C.G. (13 months after last C.T.) as before, Q_3+ and T_3 still slightly inverted (Fig. 13C). Jan. 2nd, 1933: attack of coronary thrombosis; *dyspnœa and collapse the dominant features, with pyrexia.* Death Jan. 14th, 1933.

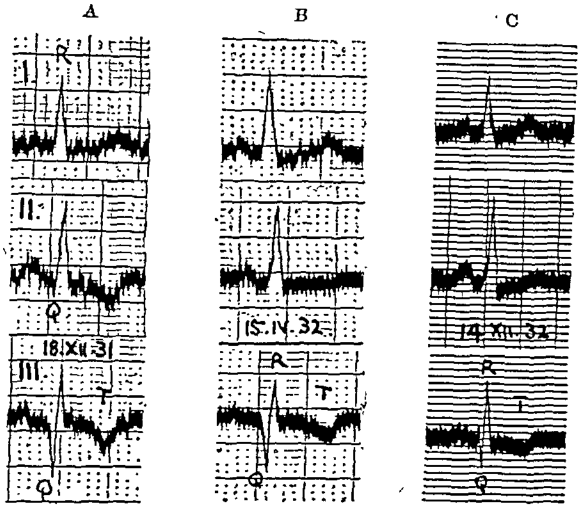

FIG. 13 (Case 15).—(A) Forty days after second attack of C.T.; T_3 type, Q_3 pronounced. (B) Five months after attack of C.T.; T_3 less inverted, Q_3 pronounced. (C) Thirteen months after attack of C.T.; T_3 only slightly inverted, Q_3 persisting.

In reviewing the position it is clear that the diagnosis of a minimal or aberrant type of coronary thrombosis is one based primarily on clinical grounds. I venture to say that this cannot be over-emphasised; a diagnosis dependent indeed on the care and intelligence with which the examination, and more particularly the cross-examination, of the patient is carried out. Occasionally the electrocardiogram may give a decisive answer when the diagnosis is in doubt. More frequently it does no more than afford additional support.

History of Graphic Methods

The history of the part played by graphic methods in the elucidation of cardiac problems is of interest and certain dates are noteworthy.

It was in 1902 that Mackenzie published "The Study of the Pulse," to be followed in 1904 by Wenckebach's "Arrhythmia of the Heart." These pioneers laid the foundation on which modern cardiology is built. Their analysis of the arrhythmias was masterly. Mackenzie utilised records of the jugular pulse as the key to the problem, Wenckebach relied largely on a careful analysis of cardiograms and radial sphygmograms.

It was *not until 1909*, however, that the specific *nature of auricular fibrillation* was demonstrated by Sir Thomas Lewis.[27] This demonstration was made possible or at any rate greatly facilitated by the string galvanometer. The case for the specific nature of auricular fibrillation was presented lucidly and in more detail by Lewis in 1910 and from that date has been recognised as a clinical entity. In 1911 the first edition of "The Mechanism of the Heart Beat"[28] appeared, since when the string galvanometer has played an increasing part in the practice of medicine. With the introduction of the galvanometer there followed a period of intensive investigation of all forms of abnormal rhythms with the result that the clinical picture of these vagaries became so sharply defined that it was possible in most instances to make an accurate diagnosis without resort to the galvanometer. In a sense the electrocardiogram, so far as the arrhythmias are concerned, had played its part as an instrument of precision. Subsequently for some years, apart from research work, the electrocardiograph was employed clinically for teaching purposes and in the investigation of the less obvious and rarer forms of cardiac disorders.

A new era began with the recognition of the peculiar and specific changes in the electrocardiogram associated with coronary infarction. Attention was increasingly focused on the myocardium and on lesions of the coronary arteries. This has stimulated further research and the electrocardiograph has proved its value in the investigation and determination of the integrity of the myocardium. It was clear that in it we possessed an instrument which could help in assessing the degree of the myocardial damage and recording the phases of recovery. With its aid the diagnosis of a typical case of coronary thrombosis has been placed on a sure basis and we are now in a position comparable to that in regard to the arrhythmias in which an electrocardiogram has become almost redundant.

Unfortunately this stage has not yet been reached in the atypical and aberrant forms. Here we are still dependent on the machine for diagnosis and corroboration. Nevertheless, even in this more obscure field, knowledge is growing, facts are being accumulated, and the electrocardiograph is steadily guiding us to a clearer conception of the clinical results of coronary disease.

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DEVELOPMENTAL MYOPIA AND THE TREATMENT OF MYOPES

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THE state of static refraction of an eye is the result of the integration of a large number of variables. In most text-books too much stress is laid upon the length of the eye. It has been shown by actual measurements that the length of the emmetropic eye may vary by as much as 2 mm., and the radius of curvature of the cornea from 7 to 8·5 mm. Compensating factors are the curvatures of the refracting surfaces, the indices of refraction of the media, and the position of the lens. As an example, a buphthalmic eye may be as much as 31 mm. in length from the anterior surface of the cornea to the retina, and yet not be myopic. Myopia may be due theoretically to any of the following conditions:—

1. Abnormally increased length of the eye (*axial myopia*).
2. Abnormal curvature of the refracting surfaces (*curvature myopia*): (*a*) too strong curvature of the cornea; (*b*) too strong curvature of one or both surfaces of the lens.
3. Abnormal refractive indices of the media (*index myopia*): (*a*) too high index of the cornea or aqueous; (*b*) too high total index of the lens, due to too high index of the nucleus or too low index of the cortex; (*c*) too low index of the vitreous.
4. Displacement forwards of the lens.
5. A combination of the above factors.

The development of the eye is such that the normal baby is born with hypermetropic eyes. During the first years of life the various factors change in such a manner that the eye becomes less hypermetropic and may become perfectly emmetropic. Statistics of the incidence of emmetropia and ametropia at different ages are very unsatisfactory owing to several reasons. The estimates of different observers are not always reliable or strictly comparable; but the chief source of ambiguity is the valuation for statistical purposes which should be allotted to various degrees of astigmatism. From the statistical point of view, however, the generalisation that the normal eye is hypermetropic at birth and tends constantly during the early years of life towards a condition of diminished hypermetropia may be regarded as true.

THE NORMAL AND THE IDEAL NORMAL

The statistical investigation of any variable commences with the determination of its frequency distribution. Thus, if in an adult male population the numbers of individuals are plotted against their heights, a "cocked hat" curve is obtained which almost exactly coincides with the theoretical ideal symmetrical frequency-distribution curve. In such a curve the criterion of absolute normality is given by the maximum ordinate, but slight differences on each side of the maximum cannot be regarded as pathologically abnormal. In very many biological and other examples—e.g., the weight of adult males—the distribution curve is asymmetrical or skew, the greater frequencies lying towards one or other end of the range. Owing to the higher incidence of hypermetropes at birth we should expect the frequency distribution of variations in refraction to present such a skew deviation curve.

In all such "populations" large numbers of individuals approximate nearly to the statistical ideal normal as judged by the maximum ordinate of the frequency curve. Apart from the statistical examination there is often no more reason for regarding these as less normal than the ideal normal. In the case of the refraction of the eye, on the other hand, the normal has not been arrived at by statistical methods, but by quite other considerations. Emmetropia is the condition in which parallel rays are brought to a focus on the retina; optically considered, it is an ideal normal. Moreover, it is one to which large numbers of individuals conform, and which must therefore deviate little from the statistical normal. The cases are rare in which nature attains the optimum invariably, as in the angle of the honeycomb cell; and emmetropia is certainly not one of these cases.

Owing to the prolonged immaturity of the young of primates, and especially man, the teleological argument would lead one to expect that human vision is specially adapted to the requirements of early and middle adult life. During this period accommodation is active, and the moderate hypermetrope is at least as well adapted to everyday life as the emmetrope. The fact that practically all mammals are hypermetropic would lead one to expect that their statistical ideal normal is definitely hypermetropic, and it would seem that in man the frequency curve has shifted towards the emmetropic condition. Too much stress cannot, however, be placed on this argument, owing to the absence of a fovea in lower mammals and the differences in their vision and mode of life. It would be interesting to know whether the lower primates are ever emmetropic or myopic.

In any case it would seem certain that from the biological point of view we should expect to find many examples of permanent low hypermetropia, and a few—but perhaps not negligible—examples of permanent low myopia. Such cases are fundamentally no more pathologically abnormal than short men or tall men. My own experience, chiefly derived from private cases carefully watched over a number of years, is that cases of "stationary" myopia conforming to this hypothesis are not very uncommon. One meets with children with very low degrees of myopia which increase up to a maximum of 1 or 2 dioptres during the growing period, and then remain quite stationary. As a rule their fundi are perfectly normal, and there are no myopic crescents. Of course it is impossible to be certain that any such child belongs to this group of "developmental myopia," since every progressive myope must pass through the stage of low myopia. Certainly some such cases remain stationary for many years.

VISUAL CAPACITY

If, as suggested above, there has been a tendency in the mammalia for the maximum of the frequency curve to shift towards low hypermetropia or emmetropia, some enhancement of this tendency might be anticipated as the result of civilised conditions. If so, it would not be surprising for cases of low myopia to occur from this cause. Important as perfect visual acuity is, I am of opinion that its value is not infrequently over-estimated. A man's visual efficiency depends not only on his visual acuity, but also upon his field of vision, rapidity of accommodation and adaptation, and many other factors which can be conveniently summed up in the term *visual capacity*.[1] Even when a man's visual capacity has diminished his working efficiency for his job may be little impaired, owing to the compensating effects of acquired technical skill. This fact was conclusively proved in certain cases by an investigation carried out by the Committee on the Physiology of Vision of the Medical Research Council for the Royal Navy. It is a well-known fact that a good game shot remains good long after his visual capacity has materially declined.

MYOPIA AND NEAR WORK

It is a remarkable fact that the eye, which can scarcely be regarded as having been evolved for the express purpose of adaptation to the needs of civilised life, is yet capable of fulfilling them with relatively little detriment or even discomfort. There are, indeed, many occupations in which a low degree of myopia, per se, is a real asset. If there are cases of "stationary" myopia such as I have suggested, they are eminently suited for such occupations, since there is no reason to suppose that they would suffer in any way. I think the evidence is in favour of the view that degrees of myopia (e.g., of 4 or 5 D), which I have not ventured to include in the above category, may yet suffer no detriment whatever from a considerable amount of near work. The natural and quite justifiable dread of the evil effects of near work on myopia has, in my opinion, led some ophthalmic surgeons to undue pessimism, and in some cases to serious and unnecessary interference with children's education. I have had cases of children of 11 or 12 years of age, with 3 or 4 dioptres of myopia, whose parents have been warned of the direst consequences unless they take the children away from school for two or more years and practically allow them to do no near work. In my opinion in most cases of low myopia a reasonable amount of near work, carried out under the best conditions and with proper precautions as to correction of refractive errors (especially astigmatism), good lighting, proper working distance, and strict attention to general health, does no harm at all. It is even doubtful whether it has any appreciable effect in increasing the rate of development in cases which are truly progressive. Nevertheless, of course each case must be periodically examined at short intervals and near work restricted if increase is at all rapid.

So far as the eyes themselves and vision are concerned no deleterious consequences are likely to accrue even if cases of developmental myopia are not corrected at all. Such patients may get headaches, &c., if there is anisometropia or astigmatism, but not if both eyes have the same amount of myopia, and there is no astigmatism. I think the same applies to cases of low myopia which more doubtfully belong to the developmental and stationary group. I regard it, however, as of the greatest importance that these children should wear their distance corrections, and wear them constantly—not specially in the interests of their eyes, but in the interests of their mental development. For children with even low degrees of uncorrected myopia cannot be expected to take a normal interest in their surroundings since they cannot see distant objects as clearly as their fellows. Their mental horizon is constricted, they tend to become unduly introspective, and they are thrown more and more into finding their interest in reading and near work, so that it becomes more difficult than ever to restrict such work.

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[1] See Brit. Med. Jour., 1928, ii., 205; Fergus, Freeland: ibid., 1928, ii., 287.

Many patients with moderate degrees of myopia are perfectly happy when using their distance corrections for all purposes. They are thus placed as nearly as possible in the condition of emmetropes. But this does not apply to all cases, especially if the patients are engaged—as many are, and must be—in prolonged near work. In these cases they are much happier with a weaker correction for near work.

The treatment for patients with high degrees of myopia has been the subject of much thought and care, and great advances have been made in recent years. The establishment of "myope" classes has undoubtedly been a step in the right direction and has had an undeniably beneficial effect. At the same time it has been by no means free from the enthusiasm which outruns discretion. Many of these patients are advised to adopt a régime and mode of life which is as ill-judged as to advise a poor patient to winter on the Riviera. Are we really quite so certain of the data upon which we found our counsels of perfection as we think we are? I think that in cases of progressive myopia the evidence is overwhelming that near work, especially when prolonged or carried out under unsatisfactory conditions, tends to aggravate the disease—for these are cases of disease, therein differing from what I have called developmental myopia. I am entirely in support of the principles underlying the methods adopted in myope classes, but I am also convinced that in many cases lack of judgment is shown in pushing these principles to their logical conclusion. We have to face the fact that many high myopes are condemned, ipso facto, to spend much or most of their working hours doing near work, and we cannot deny that in many respects they are specially adapted to perform this type of work. Moreover, large numbers do so for many years without disaster. Many such cases settle down in early adult life to a degree of myopia—often indeed of high degree—which shows little or steadily diminishing rate of increase. Each case must be considered on its merits (or demerits), general health, social status, and occupational opportunities must be evaluated, and a sane compromise arrived at which errs neither on the side of idealism nor recklessness.

CLINICAL MANIFESTATIONS OF PULMONARY TUBERCULOSIS IN CHILDHOOD

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(WITH ILLUSTRATIONS ON PLATE)

Phthisis is one of the rarest of the diseases of childhood, and as it is improbable that the disease was ever common in the early years of life it is not very easy to understand the fear of consumption in childhood, which still prevails among the laity and even to some extent in the profession. The pathos of consumption in adolescence has been fully exploited by novelists, but even the Victorian writer, who did not scruple to employ the death-bed of a child as a means to evoke the flow of tears upon which his income depended, was obliged to find some other means than consumption when disposing of his child victims. Disobedient children might be poisoned with deadly nightshade or gored by mad bulls, children too good for this world might succumb to fevers or simply fade away, but their little nightshirts were never stained with the "blood-red spots" which bespattered the "glittering fan" of Ethel Churchill.[1] If consumption had been at all common in childhood a century ago, Little Nell and Paul Dombey need not have declined in so unscientific a manner. Improved methods of diagnosis have enabled us to recognise many forms of pulmonary tuberculosis in childhood previously unknown, but it has only confirmed clinical and lay observation in proving the rarity of phthisis in the early years of life.

RARITY OF OTHER FORMS OF PULMONARY TUBERCULOSIS IN CHILDHOOD

It is often assumed that though phthisis in childhood may be rare, milder manifestations of pulmonary tuberculosis are common, and that by the early recognition of certain stigmata which indicate incipient disease, graver developments may be precluded. We are asked to believe that adolescent phthisis can be prevented by the adequate treatment of children who have been quaintly described as pretuberculous. This is not so. Pulmonary tuberculosis is not often the cause of delicacy in childhood in this country. The most meticulous examination of the delicate child will rarely reveal any evidence of tuberculosis save that supplied by a positive reaction to skin tests, a reaction which merely proves that the child has been the subject of a primary infection, and that its tissues are hypersensitive to tuberculin. We do not even know whether allergy implies increased susceptibility, relative immunity, or neither. A "follow-up" of child "suspects" through the danger years of adolescence would probably show a percentage of tuberculosis, little, if any, greater than might be found in a "non-suspect" group drawn from the same social class and circumstance. There is no definite evidence that primary infections which do not produce demonstrable lesions have any ill-effect upon a child's health. But though pulmonary tuberculosis is uncommon in childhood, the disease cannot be relegated to the class of medical curiosities. Failure to recognise it may be attended with disastrous consequences, and a knowledge of its varieties and of the evidence upon which a correct diagnosis depends is essential if needless fears are to be allayed or incipient disease arrested.

PARAMOUNT IMPORTANCE OF RADIOLOGY IN DIAGNOSIS

In diagnosis we have to depend almost entirely on the X ray picture of the chest. Symptoms are not distinctive. The history of coughs, malaise, and malnutrition are frequently given when a delicate child is brought for examination. They may even be due to a digestive disturbance wholly unconnected with the lungs. Sweating, a symptom of no diagnostic significance, is the one to which maternal solicitude generally attaches chief importance—a curious reminder how short a time separates us from the days when a complete absence of bedroom ventilation was responsible for drenching sweats in dying consumptives. Physical signs are notoriously unreliable in the examination of tuberculous patients, and in childhood they are perhaps even less helpful than they are in later years. Thus X ray examination of the chest should be made whenever a history of contact with infection suggests that delicacy may be associated with a tuberculous infection, and to exclude the possibility of such an infection when no other cause for a persistent malaise is apparent.

A SIMPLE CLINICAL CLASSIFICATION

If we exclude those cases in which X ray examination reveals calcified foci in the lung fields and calcified nodes at the lung roots, evidence of arrested and healed infection often found in routine examination of the chests of children in good health, we can recognise six varieties of *pulmonary tuberculosis*, three of comparatively benign and three of serious import.

Benign group.—(1) Tuberculous adenitis and "epituberculous" manifestations. (2) Chronic miliary tuberculosis. (3) Tuberculous pleurisy with effusion.

Serious group.—(1) Acute miliary tuberculosis. (2) Tuberculous pneumonia. (3) Adult type of phthisis.

DIAGRAMMATIC REPRESENTATION OF PATHOLOGICAL CHANGES

It may help us to appreciate the meaning of the facts observed at the bedside and the changes seen in chest radiograms if we attempt a diagrammatic representation of the changes that follow infection. It is obvious that such a scheme will not accurately represent pathological processes, but it may help to clarify our ideas as to the kind of developments which follow infection.

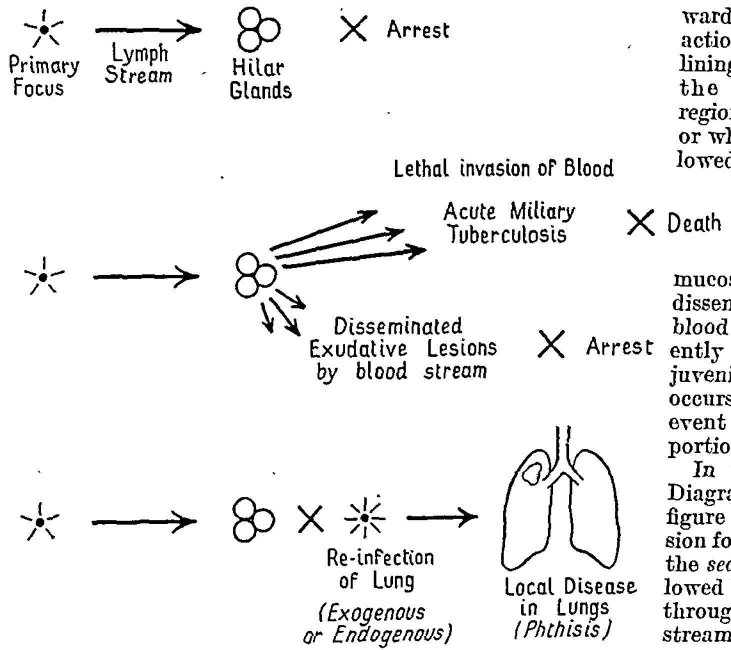

DIAGRAM I.—*Diagrammatic representation of the probable course of events following primary infection.*

(1) Our starting point must be the "primary complex." Here we are on fairly sure ground. When tubercle bacilli are first deposited in the lung a nidus is formed, from which infection travels up the lymph channels through the subsidiary lymphatic nodes to the root glands. The pathological evidence for this is secure and radiological evidence confirms it, for after healing has occurred deposits of calcium enable us to see the primary focus as a minute shadow often situated subpleurally, a slight accentuation of the normal lymph-vascular striations, and a core of calcium in the nearest hilar glands.

(2) The disease, or perhaps we should rather say the process, for primary infections are generally unaccompanied by evidence of disease, usually comes to an end with the arrest of tubercle bacilli in the root glands. Further developments may however ensue and result in a series of pathological changes which are characteristic of juvenile tuberculosis. Most of these are of an exudative nature and will be discussed later. Here we need only note their widespread distribution which leads us to conclude that the lymphatic infection is followed by a blood infection. This may take the form of a tuberculous bacillæmia leading to death within two or three weeks, or to more or less benign inflammations in pleura, parenchyma, or joints, usually followed by recovery. As the lymphatic system is in direct communication with the blood stream the manner in which lymphatic infection may lead to a tuberculous bacillæmia is easy to understand. Dr. R. Pearce has made the ingenious suggestion that a direct ulceration of the wall of a blood-vessel by a caseating primary focus might account for acute miliary tuberculosis, while the passage of bacilli into the blood stream from an infected gland might account for the less serious manifestations of a blood-borne infection. It is noteworthy that when he was endeavouring to recover tubercle bacilli from the blood in a series of tuberculous patients he only obtained two positive results, one in a case of acute miliary tuberculosis, the other in one of chronic miliary tuberculosis. The latter, as will be seen presently, is one of the relatively benign types. Our scheme must evidently take cognisance of this systemic inundation.

(3) The adult type of tuberculosis differs from the juvenile. It is in the main a local disease which spreads by continuity, and as a rule only involves distant organs by accidental infection, as when bacilli are swept upwards by the ciliary action of the bronchial lining and deposited in the interarytenoid region of the larynx, or when they are swallowed and find a suitable nidus for development in the intestinal mucosa. The general dissemination by the blood stream, apparently common in the juvenile types, only occurs as a terminal event in a small proportion of adult cases.

In the scheme (see Diagram 1) the *first* figure represents invasion followed by arrest, the *second* invasion followed by dissemination throughout the blood stream, the *third* represents the result of primary infection successfully overcome but followed by reinfection (endogenous or exogenous) and local disease in the lungs of adult type.

It will be remembered that Ranke drew an analogy between the three stages of syphilis and the three stages of tuberculosis. Such an analogy is helpful in emphasising the fact that in tubercle as in syphilis there is a stage of primary infection, a stage of dissemination, a stage of localised disease, but we have only to consider the generalised tuberculosis which often terminates the course of chronic phthisis to realise that exceptions occur.

BENIGN FORMS OF PULMONARY TUBERCULOSIS IN CHILDHOOD

(1) *Tuberculous adenitis of mediastinal glands and associated conditions.*—Active tuberculous adenitis is only visible in radiograms when the glands are either calcified or so grossly enlarged that their outer margins project beyond the mediastinal shadows (Fig. I. on Plate). The association of parenchymatous or pleural exudation with glandular enlargement is frequent and causes characteristic shadows in the skiagram. Such exudative areas in the lung fields

are represented by uniform semi-translucent opacities, the edges of which are blurred. The absence of the coarse mottling associated with broncho-pneumonia and of the striations and granular stippling associated with fibrosis is to be noted. The characteristic shadow of pulmonary exudation in the vicinity of the root glands is seen as a triangular opacity based on the hilum and tapering towards the axilla (Fig. II. on Plate). It is often flame-shaped. Such a "hilum flare" must be due either to a perifocal reaction around the tuberculous glands, to a similar reaction among tubercles situated in the vicinity of the glands, or to lymphatic obstruction of the vessels converging on the lung root by glandular enlargement. An interlobar pleurisy, especially on the right side where the plane of the interlobar fissure between upper and middle lobes is nearly tangential to the rays, may produce a similar triangular shadow, but in this case its lower margin is clean-cut and runs more or less horizontally outwards (Fig. I. on Plate). An interlobar pleurisy, parenchymatous exudation, and adenitis may be combined. More often inflammation of the root glands is associated with effusion between the two layers of the parietal pleura.

The condition which has been termed epituberculosis appears to be related to that just described, for the shadows of a healing epituberculosis closely resemble a hilum flare, while I have seen a case in which an extension of a flare resulted in a picture indistinguishable from that of epituberculosis. The two conditions well exemplify the "ebb and flow" which is typical of the exudative lesions of juvenile tuberculosis (Fig. IV. on Plate).

In "epituberculosis" the physical signs are those of a lobar consolidation which usually involves the right upper lobe, but it differs from a pneumonia in onset, which is seldom accompanied by symptoms of acute disease and which may be entirely "latent" in its course, which is chronic, and in its resolution, which takes place as a slow clearing from the periphery. There is no respiratory distress, and neither the fine crepitations of incipient nor the coarse crepitations of resolving pneumonia are heard. There is usually a history of exposure to the risks of massive infection by contact with a phthisical parent. Skin tests are strongly positive, and a complement-fixation test for tuberculosis may also give a positive result. Tubercle bacilli have been recovered from stomach washings and by exploratory puncture of the lung. The clinical picture is thus that of a curiously benign pneumonia in a tubercle-infected child which persists for a period of several weeks or even months and which resolves leaving either a perfectly healthy lung, or in some instances some slight evidence of parenchymatous scarring (Fig. III. on Plate).

The pathological basis of "epituberculosis" has been much debated. Elias and Neuland,[2] to whom the credit of its first description is due, regarded it as evidence of a non-specific response around a specific (i.e., tuberculous) focus. When a Mantoux test is made on a child in whom a high degree of allergy has resulted from primary infection a large weal forms, due to the outpouring of exudate into the tissues surrounding the point of inoculation. It is not unreasonable to suppose that a more widespread flooding of air cells and areolar tissue may take place in the pulmonary tissue as a response to the deposit of tubercle bacilli in the lung. The exudative response to specific irritation in the subjects of urticaria, hay-fever, and asthma furnishes an analogy. An alternative explanation is that the X ray appearances represent a lobar atelectasis, due to the compression of a main bronchus by an enlarged gland. In cases of epituberculosis enlarged root glands are often seen in either antero-posterior or lateral films. In some instances the appearances seen in epituberculosis are indistinguishable from those seen in atelectasis. In addition to the lobar opacity the interlobar septum may be drawn upwards, proving a measure of retraction of the lobe. Scott Pinchin and Morlock[3] have recently described such a case in which bronchoscopy proved that a tuberculous gland was compressing and ulcerating the bronchial wall. Removal of the obstructing material was followed by a rapid clearing of the opacity in the lung field. It should be noted, however, that in many cases there is no evidence of any gross enlargement of the root glands, that the hilum flare which is evidently an analogous condition cannot be due to pulmonary collapse, and that though some enlargement of the root glands accompanies the parenchymatous exudation it does not necessarily follow that one is the effect of the other, for the two phenomena may result from the reaction of different tissues to the same stimulus. Adenitis is almost invariable in juvenile tuberculosis.

The results of the few post-mortem examinations that have been made are conflicting and it would be wiser to suspend judgment until further evidence is forthcoming. It is evident that some cases resembling epituberculosis are due to atelectasis. It is probable that other factors are at work in other cases.

(2) *Tuberculous pleurisy with effusion.*—The onset of pleurisy in the adult is usually accompanied by severe pain and pyrexia, which only subside when effusion has occurred. The tuberculous pleural effusions of childhood seldom cause much distress, and the presence of fluid may only be discovered in the course of a routine examination of a child "contact." Thus, though in adults a tuberculous pleurisy implies an active inflammation, in childhood we seem to be dealing rather with an exudation analogous to the pulmonary exudations just considered.

(3) *Chronic miliary tuberculosis.*—One of the surprises sprung by radiography on the unsuspecting phthisiologist was the revelation of a non-fatal form of miliary tuberculosis (Figs. V. and VI. on Plate). Unaccompanied by symptoms of serious illness at onset or by physical signs of disease in the chest, healing spontaneously in some cases and in others progressing slowly to give rise to the signs of a destructive phthisis, radiology alone could supply evidence of the condition. The radiographic picture of the chronic miliary form resembles that of acute miliary tuberculosis, but is distinguished from it by the fact that the stippling of the lung fields is coarser. Careful inspection also reveals the fact that the individual opacity has a slightly blurred outline.

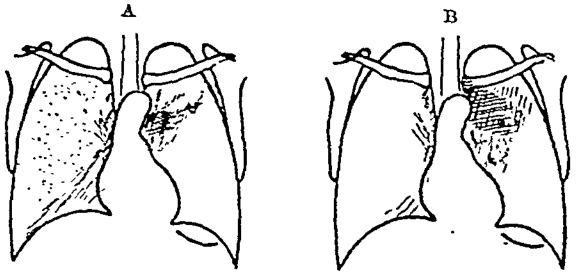

DIAGRAM 2.—(A) Boy, aged 12. Drawing from skiagram of Dec. 12th, 1932. Miliary stippling of right lung. "Hilum flare" on left. Tuberculous arthritis of right wrist. Contact of phthisical step-brother. Tubercle bacilli obtained from pus from wrist sinus. (B) Skiagram of May 17th, 1933. Clearing of stippling from the right side has been followed by development of an epituberculous shadow on the left.

In favourable conditions resolution occurs, often with surprising rapidity, and when resolution is complete no scarring is observed. Chronic miliary tuberculosis may be accompanied by "epituberculous" manifestations or by pleural effusion, and would thus appear to be one variety of the exudative phenomena common in childhood tuberculosis.

The difference between acute miliary tuberculosis and the chronic form may be tabulated as follows :—

Acute miliary	*Chronic miliary*
(1) An acute illness usually terminating in death within two or three weeks of onset.	A chronic malaise followed by resolution and recovery or by the slow development of chronic phthisis.
(2) Progressive and rapid wasting.	The patient may be poorly nourished or plump.
(3) Physical signs in the lungs may be absent, but scattered fine crepitations are usually heard.	Physical signs are absent or those of a chronic catarrh.
(4) Cyanosis usually present and often a marked feature.	No cyanosis.
(5) Acute pyrexia.	Temperature normal or of subfebrile type.
(6) May be associated with meningitis.	Associated with enlargement of hilum glands and exudative phenomena as pleural effusion or epituberculous manifestations.
(7) X ray examination shows the typical "snowstorm" appearance.	Skiagrams show coarser stippling and less universal distribution in the lung fields.
(8) Skin reaction may be negative.	Skin reaction usually strongly positive.

The close relationship between submiliary tuberculosis and epituberculosis is shown by the case of a boy aged 12 years. In this instance serial radiograms showed that while stippling due to disease with miliary distribution was clearing on the right side, an area of exudation in the left upper lobe was extending outwards from the mediastinum. Ultimately the X ray appearances of a typical epituberculosis was produced. The boy also suffered from a tuberculous arthritis of the wrist, and tubercle bacilli were demonstrated in pus from this source. (Diagram 2.)

ACUTE FORMS OF PULMONARY TUBERCULOSIS IN CHILDHOOD

(1) *Acute miliary tuberculosis.*—This classical manifestation of pulmonary tuberculosis in childhood, though not a common cause of fatality in early life, is still responsible for many deaths. When we discover pulmonary tuberculosis in an adult it is frequently impossible to ascertain the source of infection, but no such difficulty should be encountered when determining the source of infection in the cases we are now considering. The child who is suffering from acute generalised tuberculosis must have been the subject of massive infection from some person in close contact and generally living under the same roof. This is a disease which is clearly preventable, and far more determined efforts should be made to remove young children from contact with phthisical adults. In the county of Essex, in the year ending June 30th, 1933, 34 deaths from tuberculous meningitis were notified in children under the age of 10 years. This represents a rate of 0·13 per 1000 living in this age-group. As the administrative area includes many of the densely populated urban areas of East London and the typical rural districts of East Anglia, it is evident that the disease no longer represents a serious menace to child life in this country, but it should represent no menace at all. Reference has already been made to the clinical condition, and further description here is unnecessary.

(2) *Acute tuberculous broncho-pneumonia.*—In symptoms and physical signs tuberculous broncho-pneumonia closely resembles the common type. A suspicion that Koch's bacillus may be responsible should be entertained when the course of a broncho-pneumonia is prolonged beyond a period of two or three weeks, when in the absence of any evidence of empyema remittent pyrexia persists, and when wasting and cyanosis are marked features. A history of exposure to infection is suggestive that a broncho-pneumonia may have a tuberculous origin. Confirmation of the diagnosis must be sought by sputum examination if there is expectoration. If no sputum is available the fæces should be examined for acid-fast bacilli. The tonsils may be swabbed or a laryngeal mirror held over the entrance to the glottis may excite coughing and enable a sample of bronchial secretion to be collected from its surface. Before death the symptoms of a steadily progressive decline terminating in symptoms of meningitis may make the diagnosis evident. X ray examination, if this is possible, does not distinguish between tuberculous and non-tuberculous pneumonias. The disease is usually but not invariably fatal, and I have seen one case which terminated in complete recovery.

(3) *Tuberculosis of adult type.*—Though extremely rare, phthisis does occasionally develop in early childhood (*Figs. VII. and VIII. on Plate*). At the present time I have a child of 6 years under my care who is receiving artificial pneumothorax treatment for phthisis of adult type, the first signs of which were evident at the age of 4 years. The disease is usually of a chronic type and thus has more affinity with the proliferative or fibrotic variety commonly met with in adults of middle age than with the more exudative and florid disease of adolescence and early adult life. Diagnosis depends upon physical signs which, owing to the early tendency to fibrosis, can

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LEGENDS TO ILLUSTRATIONS ON SPECIAL PLATE

FIG. I.—Boy, aged 7. *Contact of phthisical father. Large tracheobronchial gland on right side (left of skiagram) with triangular shadow due to interlobar pleurisy.*

FIG. II.—Girl, aged 9. Contact of sister who died of *consumption in 1930. Note calcified focus in left second intercostal space, and "hilum flare."*

FIG. III.—*Boy, aged 6. Epituberculosis in which resolution, with peripheral clearing, has begun.*

FIG. IV.—*Boy, aged 4.* History of contact doubtful. Mantoux 1 : 100 +++ (Great Ormond-street Hospital). *Note that the shadow on the right side is intermediate in type between the peri-hilum flare and the massive lobar involvement of the typical "epituberculosis" shadow.* A year later resolution was nearly complete.

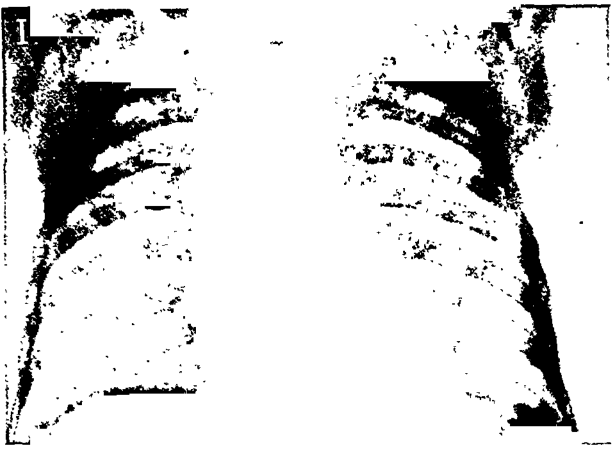
FIG. V.—*Girl, aged 4. Skiagram of August 3rd, 1931.* Diffuse stippling of both lungs due to miliary tuberculosis (*chronic type*). *Note also the gross enlargement of the right tracheobronchial glands and the evidence of pleurisy at the right base.* Tubercle bacilli were recovered from a sinus arising from a caseating cervical gland.

FIG. VI.—Skiagram from same patient, dated April 3rd, 1933. *Complete recovery from all the lesions.*

FIG. VII.—Boy, aged 4. Skiagram of July 2nd, 1930. *Contact of phthisical brother who died at the age of 16* in 1931. Note rounded opacity in first right interlobar *space, due to incipient pulmonary tuberculosis of adult* type.

FIG. VIII.—*The same case.* Skiagram of Oct. 27th, 1931. A cavity has developed in the right subapical region.

DR. BURTON WOOD: PULMONARY TUBERCULOSIS IN CHILDHOOD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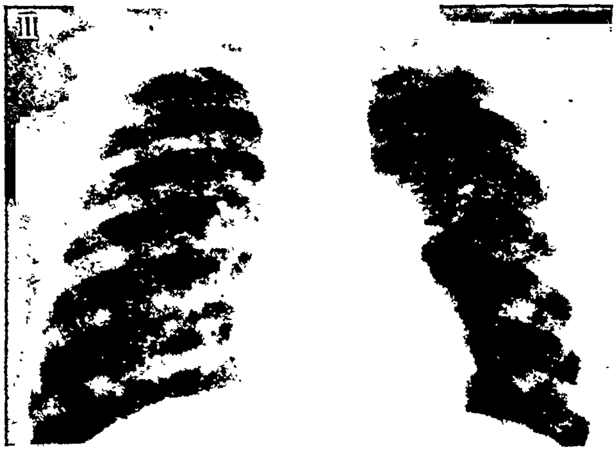
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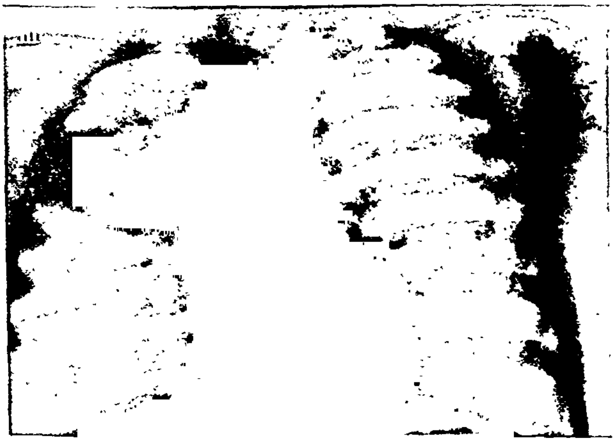
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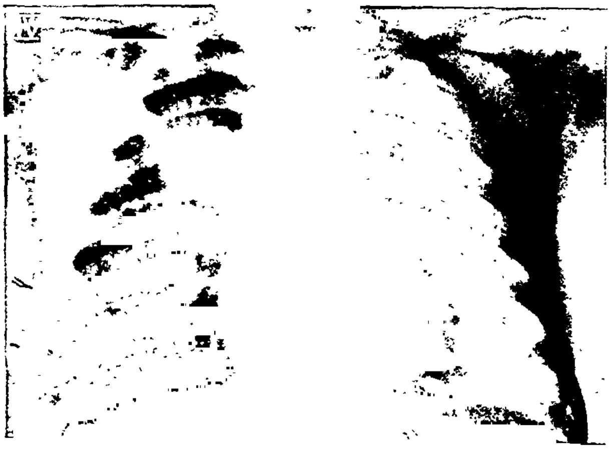
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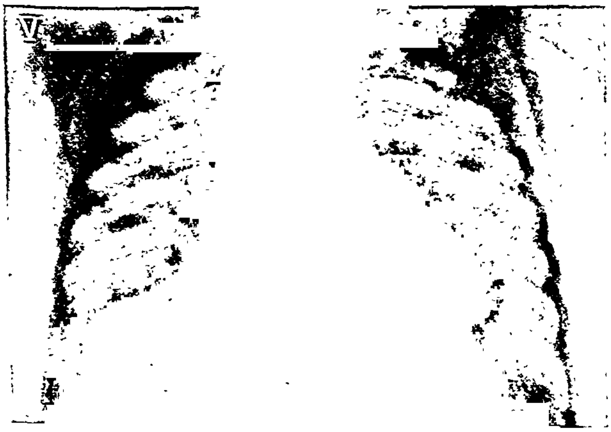
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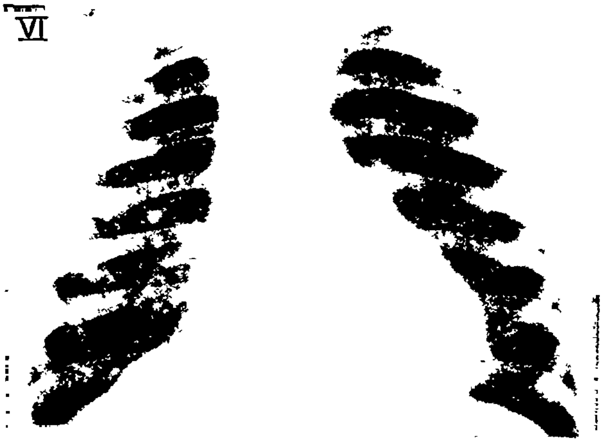
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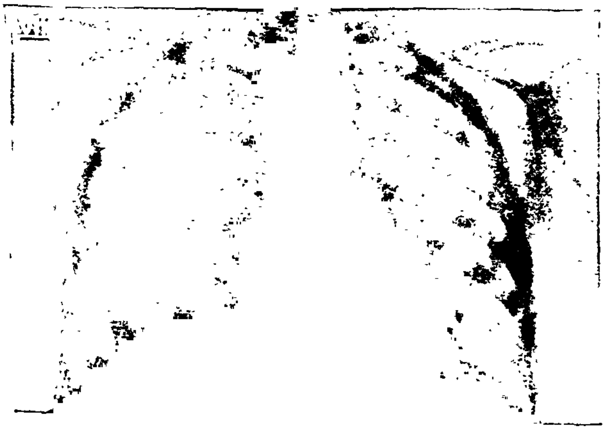
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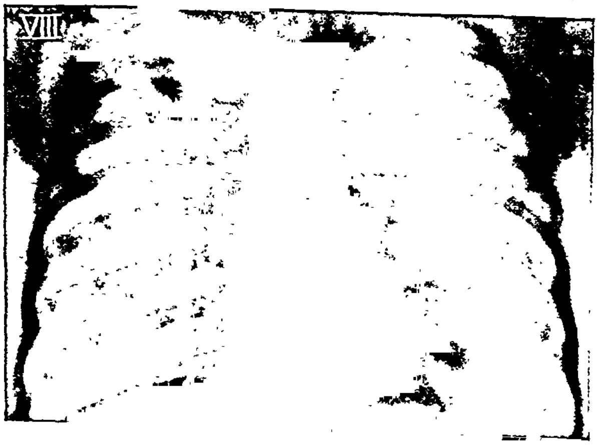
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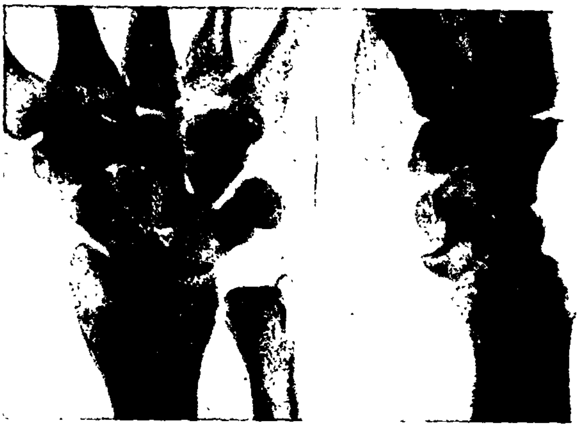
MR. J. K. MONRO: DISLOCATION OF THE SEMILUNAR BONE

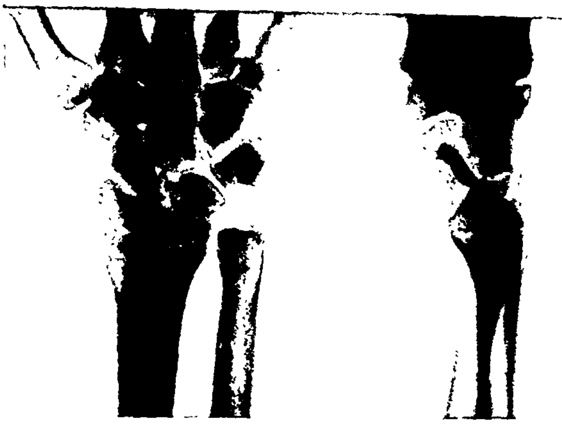
FIG. I



A B

Eleven days after accident.

FIG. II

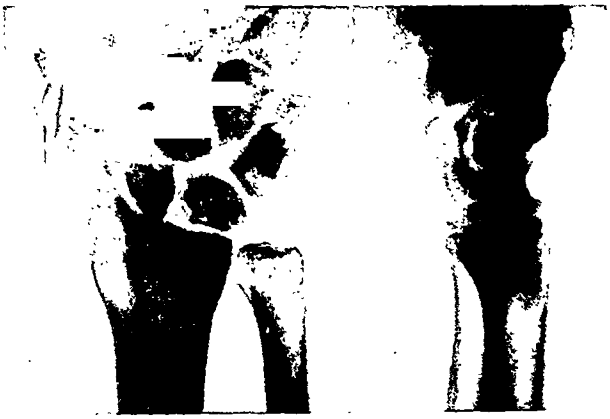


A B

Thirty-one days after accident.

Radiograms from the case described in the text.

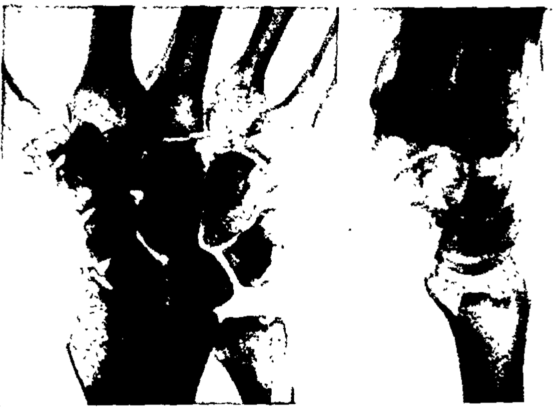
FIG. III



A B

On day of accident.

FIG. IV



A B

Eight months later.

Radiograms from a case with fracture of the scaphoid in addition to dislocation of the joint between the semilunar and the os magnum.

PROF. BLAIR AND DR. DAVIES: INFRA-RED PLATES IN NEUROHISTOLOGICAL ILLUSTRATION

FIG. I

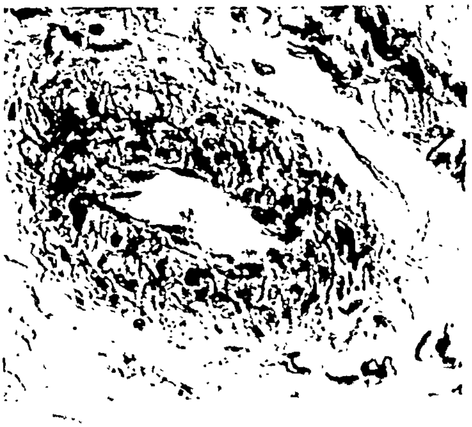


FIG. II

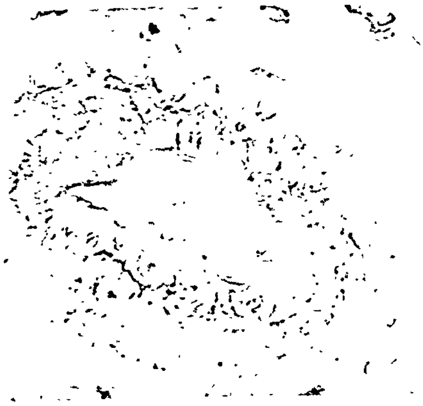


FIG. I. Transverse section of small branch of coronary artery in left limb of bundle of His, cow heart. × 450. Panchromatic plate.

FIG. II. The same preparation photographed on infra-red plate. × 500. For explanation see text.

generally be elicited except in the earliest stages. As in adult phthisis the disease usually commences in the subapical region. It should be remembered, however, that scarring of an upper lobe occasionally follows a broncho-pneumonia, and a diagnosis of phthisis should never be made unless X ray examination or bacteriology supply unequivocal evidence of of the disease.

My thanks are due to Dr. J. V. Sparks, of the radiological department of the Victoria Park Chest Hospital, and to Dr. M. C. Wilkinson, medical superintendent of the Black Notley Sanatorium, for their helpful coöperation. I have also to thank Dr. Pearce, of the pathological department of the former institution, for valuable criticism, and Dr. W. A. Bullough, county medical officer for Essex, for his constant support of the sanatorium work.

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INFRA-RED PLATES IN NEUROHISTOLOGICAL ILLUSTRATION

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(WITH ILLUSTRATIONS ON PLATE)

In The Lancet of May 27th, 1933, we described the use of infra-red photographic plates in a special study of certain types of nerve-cells. Since then we have explored the usefulness of these plates in another direction likely to be of more general interest to neurohistologists. The commonly used silver methods for demonstrating nerve-fibres produce a black coloration of the axis-cylinder processes of the nerves against a background of connective, muscular, or other tissue stained in varying shades of yellow or brown. The nuclei of the tissue cells vary in prominence of stain according to the method or modification employed. Often, especially in studying intracellular nerve-endings, it is useful to have the nuclei clearly indicated, but their dark-brown impregnation may obscure the appearance of the nerve-fibres. Photographic illustration of such preparations is specially difficult owing to the low actinic value of the yellow-brown background; even with panchromatic plates and appropriate colour filters it is not possible to produce a picture equal in clarity to that seen with the eye through the microscope. Probably this is one reason why convincing microphotographs of nerve preparations are seldom seen.

As we had found, in the special study of nerve-cells referred to, that the infra-red plates are sensitive to light waves below the visual spectrum which penetrated material stained dark brown, while the representation of structures stained black was unaffected, we tried the effect of photographing silver preparations of nerve-fibres with these plates. The accompanying illustrations show the value of this method in producing a clear picture hitherto unobtainable. The first picture (Fig. I. on Plate) shows the best result got on a panchromatic plate after trial of several colour filters, a result which failed to do justice to the original preparation, a section of a small branch of a coronary artery in the heart with the nerve-fibres supplying the muscle cells of the tunica media clearly stained. The second picture (Fig. II. on Plate) is of the same preparation on an Ilford infra-red plate; the nerve-fibres stand out clearly against a greatly subdued background; the terminal loop of an intracellular nerve-ending close to the left hand pole of a small pale nucleus is clearly seen in the upper part of the vessel wall; the cell nuclei still show sufficiently well for orientation purposes.

Infra-red photography thus provides a new instrument of great usefulness in producing clear and accurate illustrations of neurohistological material.

DISLOCATION OF THE SEMILUNAR BONE

By J. K. Monro, M.B. Camb., F.R.C.S. Eng., M.R.C.P. Lond.

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(WITH ILLUSTRATIONS ON PLATE)

Dislocation of the semilunar bone is an uncommon accident. During the past two years I have seen 5 cases, as compared with 25 cases of fracture of the carpal scaphoid. Often a fracture is produced by the same accident: thus in 4 of the 5 cases there were a fractured olecranon, a fractured lower end of the radius, and a fractured carpal scaphoid in two cases, in one of which there was also a fracture of a lumbar vertebra.

A window-cleaner, aged 17, on Sept. 6th, 1932, was riding a bicycle and carrying a ladder on his shoulder. The ladder caught against a lamp-post and he fell off, putting out his right hand to save himself. There was pain and swelling of the wrist, and he was treated for a sprain on a Carr's splint.

I first saw him at Poplar Hospital on Sept. 17th, when there was considerable diffuse swelling of the wrist, front and back, especially where the two transverse creases normally lie, these being obliterated. The whole swollen region was tender and he would allow almost no wrist movement. There was anæsthesia of the index-finger and of the dorsum of the terminal segment of the middle finger. The thumb could not be abducted nor opponated. A radiogram showed a complete anterior dislocation of the semilunar bone (Fig. I. on Plate).

As the dislocation was of 11 days' standing, no great hopes were entertained of the success of manipulation. This was, however, tried unsuccessfully, after which fixed traction was applied. A banjo splint was fixed to the wrist and forearm by plaster-of-Paris, and traction applied by needles through the terminal segments (pad, bone, and nail) of index, middle, and ring fingers.

The metal sides of the splint prevented a satisfactory lateral radiogram of the wrist-joint, but stereoscopic views showed clearly that the bone was still displaced forwards. The wires were tightened from time to time to maintain traction. At the end of 20 days radiograms showed an obvious increase in the joint space of wrist and carpus, but the dislocation persisting.

On Oct. 3rd a window was cut over the front of the carpus, and under nitrous oxide anæsthesia direct pressure was exerted on the region of the semilunar. There being already complete physiological division of the median at the wrist, I decided to take the chance of further damage to it. Another stereoscopic radiogram showed the dislocation still unreduced. It also showed that the semilunar was not at the centre of the window as had been intended, but further proximally. The surface marking of the semilunar is the mid-point of the wrist between the two transverse creases—i.e., rather more proximal than one might expect.

On Oct. 7th the plaster was removed and, under nitrous oxide anæsthesia again, pressure was exerted with a knuckle over the semilunar, its exact situation as shown by the radiogram relative to the window having previously been marked on the skin. The wrist was flexed and extended while this pressure was maintained and traction exerted by an assistant on the fingers by the needles. A radiogram now showed the dislocation reduced—31 days after the accident (Fig. II.).

The anæsthesia of the index and paralysis of the thumb recovered about eight weeks later. On examination five months after the accident his condition was as follows. He is fit for his work. Function of the right wrist is perfect; he says that wrist is fully as good as the other. Making a fist is not perfect owing to slightly defective power of flexing the terminal interphalangeal joints of the three fingers that were transfixed. Therefore his grip is not quite perfect, but is improving. Movements of all muscles and sensation are normal. The holes in the nails of the three transfixed fingers have just reached the tips of the nails. In the pads of each of those fingers can be felt a small bump at the site of the transfixion. There is a well-marked ridge of nail dystrophy across all five nails of the right hand, while those of the left are normal.

The radiogram (Fig. I. B) shows that the semilunar is truly dislocated forward, its proximal articular surface being scarcely in contact with the lower articular surface of the radius, while the os magnum remains in its normal position. In the other four cases—e.g., Fig. III. B—the os magnum has gone backwards (in two accompanied by the outer or radial half of the scaphoid), while the semilunar is still in contact with the radius although tilted forwards.

Median paralysis occurred in three cases. In my patient recovery was complete eight weeks after reduction. Another patient recovered motor function in three months, but a year after the accident still has slight numbness of the tips of the thumb and index. The third has similar disability after 18 months, but in him the dislocation remains unreduced and he refused operation. He had no motor loss. My patient was seen late and manipulation was unsuccessful. I had not at that time read Watson Jones's article [1] on the subject, and the manipulation was not quite according to the technique he there describes. However, even in his hands, manipulation alone was never successful when the dislocation was of more than one week's duration. It was not easy to tell clinically in this case whether reduction had taken place, although it may be so in recent cases. Conwell says [2]: "When the wrist would remain in right-angle flexion without force and did not have a tendency to rise up, the semilunar was always reduced." When attempts at reduction are unsuccessful Watson Jones makes a 3-in. dorsal incision, releases the head of the os magnum from behind the posterior lip of the semilunar by dissection, and then reduces the dislocation by manipulation. The present case shows that the head of the os magnum can be released by fixed traction as well as by open operation, and suggests that it is worth while trying this before resorting to the posterior incision.

Böhler's methods [3] are as follows. If manipulation fails he drives a pin through the bases of metacarpals 2, 3, 4, and 5, and a pin through the olecranon. He applies screw traction between these and then manipulates the wrist. When he is satisfied that reduction has taken place, he applies a plaster with the wrist straight or in slight dorsiflexion, and leaves this on for three weeks. Older dislocations he reduces by pushing the semilunar back with an elevator through a 4-in. anterior incision, and he has had successes up to eight weeks after the accident.

There can be no doubt that reduction with a minimum of trauma is the best treatment for this dislocation, although excision through the anterior incision is easy, has been the usual treatment in the past, and may be needed in late cases. Similarly excision of part of an ununited fractured scaphoid instead of procuring [4] bony union is a second-best treatment.

As dislocation of the semilunar is produced by forced dorsiflexion, it seems reasonable to fix the wrist in palmar flexion after reduction. The shape of the articulating surfaces of semilunar and os magnum, however, makes redislocation unlikely, and fixation in flexion certainly has disadvantages. Böhler has a picture [5] of a wrist fixed in flexion, and under it the legend: "Every individual who is over 40 years old and is forced to carry this splint more than a week will surely become a cripple." One of the cases I have mentioned above was, after reduction, put in plaster in full flexion for 19 days, and now lacks 40 degrees of dorsiflexion—i.e., can dorsiflex only about 5 degrees beyond the straight position. This window-cleaner's wrist was merely bandaged to a Carr's splint for five days, during which finger movements were encouraged, and then the splint was discarded and active wrist movements started. In one of the cases in which fracture of the scaphoid had to be treated in addition to the dislocation of the semilunar-os magnum joint (Fig. III.), the wrist was manipulated and immediately fixed in plaster in full dorsiflexion. Redislocation did not occur and a satisfactory result followed (Fig. IV.). The man whose dislocation remains unreduced, having refused operation, has a very useful hand, but his grip is slightly weak and he lacks 30 degrees of flexion and 10 degrees of extension.

My thanks are due to Mr. Russell Howard for permission to publish this case, to Mr. Robert Milne for suggestions, and to Dr. M. H. Jupe for the radiograms.

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A NEW TECHNIQUE IN GASTRO-JEJUNOSTOMY

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Although gastro-jejunostomy has now been in common use as a surgical procedure for more than a quarter of a century, it cannot even yet be claimed that its late results are always perfect; some are quite the reverse.

The late failures may be divided roughly into two classes: firstly, those in which the operation has been injudiciously done in unsuitable cases; and secondly, those in which the short circuit is mechanically unsound.

I am not concerned in this article with the first class, except to say in passing that the operation should never be performed unless a definite pathological lesion can be demonstrated in the theatre. It requires a certain amount of moral courage to shut the abdomen when no ulcer can be found, because to do so is an admission that one's efforts to arrive at a correct diagnosis have proved inadequate. On the other hand, to do a haphazard gastro-jejunostomy and trust to luck (as I have occasionally seen done) is a surgical crime. Unfortunately, however, cases are still met with in which, even when a demonstrable lesion has been found, the condition is not alleviated by gastro-jejunostomy, or is alleviated for a time and then recurs. Gradual increase in our knowledge and experience and greater care in the selection and in the after-treatment of cases will probably reduce the number of such failures in the future.

But what I am concerned with here is the mechanically unsound anastomosis. It is largely due, I think, to the way in which the operation of posterior gastro-jejunostomy is commonly done.

After the portion of jejunum selected for the anastomosis has been decided on and clamped, the transverse mesocolon is held up and an opening is made in it, through which a portion of the posterior wall of the stomach is delivered. It is rarely, if ever, feasible to bring down more than a comparatively small portion of the stomach wall in this way, so that it is impossible to know exactly the relation of the blood-vessels in the portion so delivered to the subsequent anastomosis or to know the angle of the incision in the stomach wall, i.e., whether it is in the long axis of the organ, or whether it is oblique in one direction or another. These difficulties are correspondingly increased if the patient is fat or if the ulcer has caused, as it often does, adhesions in the lesser sac of peritoneum. In the latter case it may be necessary to exert undue traction to get down any portion of the stomach at all and this may cause splanchnic shock and a stormy convalescence.

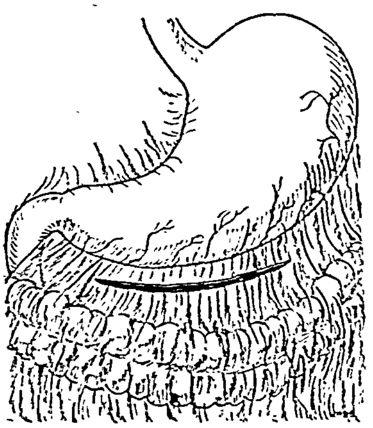

FIG. 1.—Showing incision in the gastro-colic omentum.

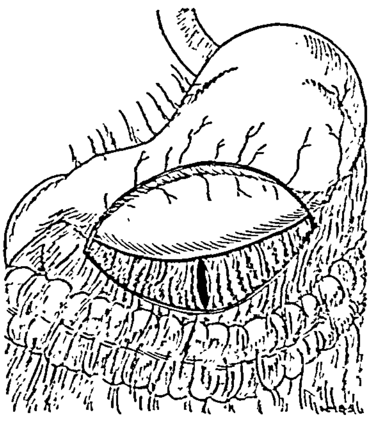

FIG. 2.—Showing the second incision into the lesser sac through the transverse meso-colon.

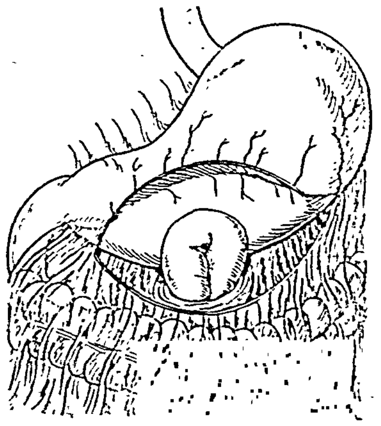

FIG. 3.—The jejunum has been drawn through the transverse meso-colon. The anastomosis is about to be made *above* the transverse colon.

Some years ago it occurred to me that an easier access to the posterior wall of the stomach would be provided by exposing it through an incision in the great omentum, and I evolved the following technique which has given me great satisfaction.

The abdomen is opened by a high right paramedian incision and a routine examination is made. As soon as I have decided that the case demands a gastro-jejunostomy I first remove the appendix as a routine measure.

I then make an incision in the gastro-colic omentum parallel with the greater curvature (Fig. 1). The omentum is here very thin and the incision is bloodless. I need hardly explain that this incision gives free access to the lesser sac, and through it the *whole* of the posterior wall of the stomach can be thoroughly examined. The site best suited for the anastomosis—i.e., the most mobile area and the one furthest from the blood-vessels—is selected and clamped.

The transverse colon is then held up by my assistant and a second opening made into the lesser sac through the transverse mesocolon (Fig. 2). With both sides of this structure exposed it is easy to select a relatively bloodless area.

A coil from the upper part of the jejunum is drawn up through the opening in the transverse mesocolon, and the most proximal part that can be apposed to the stomach without strain or tension is selected and clamped (Fig. 3).

The transverse colon is returned to the abdominal cavity and the anastomosis is made in the usual way, except that it is done in the lesser sac. Finally, the edges of the opening in the transverse mesocolon are fixed to the jejunum by a few interrupted sutures and the opening in the gastro-colic omentum is sewn up.

I have found this method to have many advantages over the orthodox one. The access to the lesser sac enables the whole of the posterior wall of the stomach to be examined so that the selection of an area, mechanically sound and free from the larger blood-vessels, can be made at leisure. All traction on the stomach is avoided, since the mobile organ (the jejunum) is brought up to the comparatively immobile organ (the stomach) instead of vice versa. This is a most important point. The absence of pulling diminishes shock and, if the patient is fat or the stomach is adherent or retracted, it renders comparatively easy an operation which might otherwise be extremely difficult. During the actual performance of the anastomosis the transverse colon is returned to the abdominal cavity and so is not liable to get chilled (as it is in the orthodox operation even if it is covered with a warm towel) and this also diminishes the shock. Since I have adopted this method I have had better results from the operation, both immediate and late.

DARLINGTON CONTRIBUTORY SCHEME.—The Darlington Memorial Hospital, which serves a population of nearly 150,000, is about to establish a contributory scheme. It is hoped to obtain a membership sufficiently large to provide an income of between £10,000 and £15,000 a year. Payments will range from 1*d.* to 3*d.* per week, the highest figure being that for husband and wife and their children under 16, whose family income does not exceed £312 a year.

BACTERÆMIA IN LOBAR PNEUMONIA

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In the course of an investigation on lobar pneumonia [1] conducted in Knightswood Hospital over the period March, 1932, to May, 1933, special attention was paid to bacteræmia. An attempt was made to take daily blood cultures from each case during the course of the disease. In the method employed 7 c.cm. of blood was withdrawn from one of the veins of the arm, and of this amount 5 c.cm. was placed in a flask containing 75 c.cm. of Hartley's broth and incubated overnight, while the remaining 2 c.cm. was plated with 15 c.cm. of melted agar in order to determine the number of colonies present. By means of an all-glass syringe fitted with an iridio-platinum needle, together with ethyl chloride as a local anæsthetic, repeated cultures could be taken with minimal discomfort to the patient.

One hundred and twenty cases were examined, mild and abortive infections being excluded. The plate method for estimating the number of colonies was employed on 84 occasions. Table I. sets forth the percentages of positive results in the series under consideration.

Table I.—*Results of Blood Cultures in 120 Cases of Lobar Pneumonia*

Type of pneumococcus.	Cases cultured.	Cases positive.	Percentages.
I. ..	38	18	47·4
II. ..	51	28	55·0
III. ..	9	4	44·4
IV. ..	22	4	18·2
Total ..	120	54	45·0

The percentage of positive results for the whole series is 45, and the percentages for Types I., II., and III. are approximately equal. The relationship of bacteræmia to death-rate is expressed in Table II.

Table II.—*Relationship of Bacteræmia to Death-rate*

Type of pneumococcus.	Cases studied.		Cases showing positive blood cultures.		Cases showing negative blood cultures.	
	Cases.	Deaths and per cent.	Cases.	Deaths and per cent.	Cases.	Deaths and per cent.
I.	38	8 (21)	18	8 (44·4)	20	0
II.	51	19 (37·2)	28	17 (60·7)	23	2 (8·7)
III.	9	4 (44·4)	4	4 (100·0)	5	0
IV.	22	1 (4·5)	4	1 (25·0)	18	0
Total ..	120	32 (26·7)	54	30 (55·5)	66	2 (3·0)

The data presented demonstrate the great difference in mortality between cases with positive cultures and those in which no bacteræmia occurred. In the one series the death-rate is 55·5 per cent., as against 3 per cent. in the other.

Table III. gives the results of colony counts in 11 cases of Type I. pneumonia in which organisms were recovered from the blood. Of seven fatal cases four were due to septicæmia, and two deaths occurred in spite of the fact that an invasion of the blood stream to the extent of 82 and 75 colonies respectively per 2 c.cm. of blood had been overcome. The remaining death was that of a frail and elderly patient aged 63, illustrating how an old person with poor resistance may succumb to a low-grade infection.

Table III.—*Degree of Bacteræmia in 11 Cases of Type I. Pneumonia*

Age in years.	Day of illness.									Result.
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	
32	–	–	–	+	–	–	–	+	–	Well.
33	..	..	..	..	..	+	4	–	–	,,
32	..	..	..	..	30	–	–	–	–	,,
17	..	..	..	–	–	10	–	–	–	,,
34	..	10	82	2	–	–	–	..	–	Died 25th day.
30	..	..	75	5	–	–	..	..	..	,, 6th ,,
18	–	12	2	4	5	6	16	106	784	,, 11th ,,
38	..	..	..	–	15	100	11	50	642	,, 12th ,,
22	..	..	..	..	70	500	..	..	..	,, 8th ,,
41	..	..	..	..	..	30	242	..	3000	,, 9th ,,
63	..	..	..	..	–	–	–	+	–	,, 13th ,,

In the above table and Tables IV. and V. the figures indicate the number of colonies in 2 c.cm. of blood; +, organisms recovered from 5 c.cm. but not from 2 c.cm. of blood; and —, *no organisms in 5 c.cm. of blood.*

The degree of bacteræmia in 19 cases of Type II. pneumonia is shown in Table IV. In this series there were 11 deaths, and of these eight were due to septicæmia and one to the effects of bacteræmia. Two occurred in young adults who showed marked delirium and toxæmia during the acute phase of the illness, and from whom, eight hours before death, 2 and 45 colonies respectively were recovered from 2 c.cm. of blood. The table also records a noteworthy case of recovery after a bacteræmia of 80 colonies per 2 c.cm. on the second day of illness.

Table IV.—*Degree of Bacteræmia in 19 Cases of Type II. Pneumonia*

Age in years.	Day of illness.									Result.
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	
29	..	..	..	+	–	–	..	..	..	Well.
28	..	..	..	..	+	–	–	..	..	,,
38	..	..	..	..	..	..	+	+	+	,,
34	..	..	..	..	1	4	4	–	–	,,
37	..	..	..	..	..	..	..	15	–	,,
28	+	–	1	18	+	–	–	..	..	,,
31	–	–	–	8	10	1	+	–	..	,,
21	..	80	2	2	1	–	–	..	..	,,
24	..	–	–	–	1	500	..	..	..	Died 8th day.
37	..	–	–	–	30	5000	..	..	..	,, 7th ,,
29	..	–	32	340	3000	..	..	..	..	,, 6th ,,
54	..	..	..	..	+	24	2000	..	..	,, 8th ,,
45	..	..	..	..	..	40	90	5000	..	,, 8th ,,
55	..	..	..	..	600	..	..	..	..	,, 7th ,,
42	..	..	..	..	..	400	..	..	..	,, 8th ,,
22	..	..	..	..	..	..	1	2	3000	,, 9th ,,
28	..	..	..	..	+	30	115	+	+	,, 10th ,,
20	..	..	..	..	..	..	..	2	..	,, 8th ,,
21	..	..	..	45	..	..	..	..	..	,, 4th ,,

Table V.—*Degree of Bacteræmia in Two Cases of Group IV. and Three Cases of Type III. Pneumonia*

Type.	Age in years.	Day of illness.						Result.
		2nd	3rd	4th	5th	6th	7th	
G. IV.	34	..	+	1	+	–	..	Well.
G. IV.	35	2	–	–	–	+	–	,,
T. III.	62	–	–	–	–	–	+	Died 8th day.
T. III.	52	..	..	–	2000	..	..	,, 6th ,,
T. III.	73	..	..	–	–	224	3000	,, 7th ,,

On the 1st, 8th, and 9th days there were no counts.
G.=group ; T.=type.

Data dealing with the presence of bacteræmia in three cases of Type III. and two cases of Group IV.

pneumonia are presented in Table V. There is a slight degree of bacteræmia in the Group IV. cases, a result in keeping with the mild nature of the Group IV. infections admitted to Knightswood Hospital during the past year. As regards the Type III. pneumonias, the table brings out two points, namely, that the infections occurred in elderly persons and that the bacteræmia developed as a terminal symptom.

There is evidence to the effect that the development of complications is related to the presence of bacteræmia. This is illustrated in Table VI. In those cases in which both bacteræmia and leucocytosis were studied, the onset of complications was preceded not only by a positive blood culture but also by a high leucocytosis. Colony counts were made in two instances. In the Type II. pneumonia which was followed by a pneumococcal abscess of the neck, there was a low degree of bacteræmia, the organisms being recovered on the seventh, eighth, ninth, and tenth days from 5 c.cm., but not from 2 c.cm. of blood. On the other occasion the development of a pulmonary abscess was preceded by the presence of 80 colonies in 2 c.cm. of blood on the second day of illness and, as indicated above, the patient made a good recovery.

TABLE VI.—*Relationship of Complications to Bacteræmia*

Type of pm.	Complication.	Day of illness on which bacteræmia occurred.	White cell count.
I.	Empyema.	6th.	36,600
I.	,,	6th.	31,900
I.	,,	4th.	24,700
II.	Pneumococcal abscess of neck.	7th, 8th, 9th, 10th.	60,000
II.	Pulmonary abscess.	2nd, 3rd, 4th, 5th.	—
II.	Pericarditis.	4th and 5th.	44,500
II.	,,	5th, 6th, 7th, 8th.	—

White cell count = count corresponding to the last positive blood culture. pm. = pneumococcus.

LEUCOCYTOSIS

The importance of leucocytosis in lobar pneumonia has been emphasised recently by Cruickshank,[2] who does not consider that blood culture should take precedence over the leucocyte count as a factor in prognosis. In the series under review a low leucocyte count was found in association with fatal septicæmias.

For example, a male adult of 29 years, suffering from a Type II. pneumonia, had colony counts of 32,340 and 3000 per 2 c.cm. of blood on the third, fourth, and fifth days of illness respectively, with corresponding white cell counts of 11,000, 6600, and 3200. On the other hand, a male adult of 30 years with a Type I. pneumonia, in which an invasion of the blood stream by pneumococci to the extent of 75 colonies on the third day of illness was successfully overcome, died on the sixth day with a negative culture and a leucocyte count of 42,000.

Further, it will be observed from Table VI. that counts of 40,000 to 60,000 may be obtained towards the end of Type II. illnesses. In this connexion it is of interest to note that Blake and Cecil,[3] in their studies on experimental pneumonia in monkeys, found that a persistent septicæmia with a rising leucocytosis during the latter part of the disease has nearly always been associated with the development of a complication such as empyema or pericarditis.

From the foregoing it is evident that the development of complications is associated with the presence of bacteræmia and high leucocytosis, and that a high white cell count in any individual case indicates resistance to infection, but does not necessarily mean recovery. Bacteræmia is a common feature of lobar pneumonia and, despite the high mortality figures presented in Table II., recovery of pneumococci from 5 c.cm. of blood may be of little importance in prognosis. The development of over 20 colonies from 2 c.cm. of blood in a healthy adult, however, represents a high degree of invasion, and guidance as to the outcome of the illness can best be obtained by further investigation. Increasing colony and leucocyte counts indicate severe invasion but good resistance, while increasing colony and falling white cell counts are of grave import and signify lack of resistance to a virulent infection.

The effects of bacteræmia, when correlated with the clinical findings, may be summarised :—

(*a*) When there is an overwhelming septicæmia and a low white cell count, there is rapid exhaustion of bone-marrow cells with complete lack of resistance on the part of the patient and the issue is invariably fatal. In the series under review, septicæmia was most frequently found in Type II. infections.

(*b*) When a high degree of bacteræmia is successfully overcome, but the local lesion remains active, the patient may die, either in a short space of time or weeks later.

(*c*) When bacteræmia of varying degree is accompanied by a high leucocytosis the illness may be followed by the development of complications, and the prognosis depends on the nature of the complication. It is possible that in Type II. infections complications occur when a persistent bacteræmia is accompanied by a high leucocytosis during the latter part of the disease.

(*d*) When there is a transient bacteræmia during the acute phase of the illness, patients who have sufficient reserve and ability to resist the degree of invasion recover without ill-effects.

CONCLUSIONS

(1) Pneumococcal septicæmia is a frequent cause of death in lobar pneumonia. (2) Bacteræmia is a common feature of lobar pneumonia. (3) This bacteræmia may be present at the onset of the illness, to disappear or become diminished in severity on the third to fifth day, and may appear to a slight extent on the fifth to ninth day without serious prognostic significance. (4) The persistence of a bacteræmia throughout the course of the illness, or a rising bacteræmia after the fourth day of illness, as estimated by colony enumeration in 1 or 2 c.cm. of blood, is of grave prognostic significance, indicating the development of a local complication or a fatal septicæmia. (5) Leucocytosis is also a valuable aid in prognosis when taken in conjunction with the degree or absence of bacteræmia. (6) There appears to be no essential difference in the development of bacteræmia in Type I. or Type II. infections, apart from the fact that the secondary septicæmia after the fourth day of illness occurs more commonly in Type II. pneumonias and plays an important part in accounting for the high death-rate in these illnesses.

I desire gratefully to acknowledge the encouragement received from Dr. William Dow, medical superintendent of Knightswood Fever Hospital.

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FOREIGN MEAT IN HOSPITALS.—The Manchester public health committee has refused to order that "English meat only" should be served in the city hospitals on three days of the week, on the grounds that the cost of the change would be "at the rate of £11,700 a year," and that the medical officer was not satisfied that any advantage in nutriment at all commensurate with the cost would be obtained by substituting English for imported meat.

MULTIPLE MALIGNANT NEW GROWTHS
ASSOCIATED WITH CARCINOMA OF THE ŒSOPHAGUS

By John E. G. McGibbon, M.B. Lond., D.L.O.

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In a small series of 40 cases of œsophageal cancer I have encountered 4 in which the patient proved to have more than one growth.

Case 1.—A male, aged 67, came to the Royal Southern Hospital in September, 1931. He complained of difficulty in swallowing of seven months' duration. During the previous five months there had been occasional difficulty when swallowing fluids, and on the above date he was able to take fluids only. Radiological examination showed a complete hold-up of the barium paste at the level of the third dorsal vertebræ. By œsophagoscopy in October a typical proliferative malignant stricture was found 9½ in. from the incisor teeth. This was dilated, and a Souttar's tube inserted. A week later the tube was removed, and a smaller-sized tube with ten 1·0 mg. radium needles distributed on its external surface was inserted into the stricture. This tube was removed in seven days' time; three weeks later the patient was swallowing ordinary food, and radioscopy showed "no delay and no irregularity of filling" of the œsophagus with barium paste.

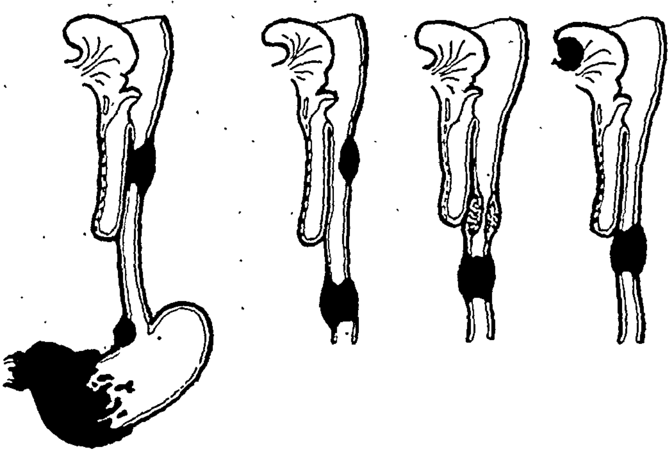
In February, 1932, the radiological report was: "Slight constriction and irregularity of œsophagus at level of third and fourth dorsal vertebræ—pointing to a lesion in this region; ? malignant. No delay above lesion." In May, 1932, the patient was again experiencing difficulty in swallowing, and œsophagoscopy showed a very firm hard stricture at the level of the previous lesion; there was no obvious ulceration however. The stricture was dilated with some difficulty and a Souttar's tube again inserted. In July the tube was removed, as it had become blocked with sago pudding. The patient now began to go downhill, although previously he had been slowly gaining weight. He died in October, 1932, and he was able to swallow up till the time of death. At no time during his illness had he complained of abdominal symptoms.

Dr. R. H. Mole, pathologist to the hospital, performed an autopsy and reported as follows: "Opposite the upper end of the trachea the œsophagus is very constricted by a nodular growth. The surface of the growth is smooth and no apparent ulceration is present. The trachea shows no lesion. No enlarged glands. The pyloric end of the stomach shows what is apparently scirrhous carcinoma, extending for several inches from the pylorus and encircling it. At the proximal margin are several apparently discrete small growths. On the lesser curvature near the œsophageal opening is a nodule of growth 0·5 in. in diameter. The cardiac end is dilated (Fig. 1). Mesenteric glands show numerous metastases. The œsophageal growth is different from the stomach growths; all are carcinomatous, but implantation of the œsophageal growth on the gastric mucous membrane, in view of the difference in character of the growths, is unlikely."

Case 2.—A male, aged 65, came to St. Helens Hospital in June, 1930. He stated that he had experienced difficulty in swallowing for nine months, and at that date he could take only soft solids and fluids. Radioscopy showed a partial hold-up of the barium paste in the middle third of the œsophagus. He was admitted the following week, and two ulcers were found by œsophagoscopy. The proximal and smaller ulcer was situated 7½ in. from the incisor teeth on the left posterolateral wall, and the œsophagoscope passed this easily without inflicting any obvious injury. The distal ulcer, which was 11½ in. from the teeth, had the appearance of a typical malignant stricture, and no attempt was made to pass the œsophagoscope beyond the neoplasm. The intervening mucous membrane between the two growths appeared normal through the œsophagoscope (Fig. 2). Small pieces were removed from both ulcers, and Prof. J. M. Beattie reported that "sections show marked invasion of the muscular wall with epithelial cells. The condition is definitely malignant." In view of the double lesion intra-œsophageal treatment was considered to be unsuitable. In September, 1930, the patient submitted to gastrostomy, and he died two months later in November, 1930. No autopsy was performed.

Case 3.—A female, aged 46, came to the Royal Southern Hospital in April, 1932, complaining of difficulty in swallowing which had been present for the "past few months." At that date she was able to take soft foods only. She stated that she had suffered from "stomach trouble" for two years previously. Radioscopy showed "marked irregularity of the middle third of the œsophagus pointing to malignant disease." A few days after admission œsophagoscopy was performed, and a hard ulcerated stricture was found 10 in. from the incisor teeth. This stricture was dilated and a Souttar's tube inserted. A snipping was removed from the growth, and Dr. Mole reported "epithelioma." Sixteen days later the Souttar's tube was removed, and a tube with nine 1·0 mg. radium needles was inserted. This was removed in eight days' time, and the patient was discharged a week later able to swallow comfortably.

FIGS. 1 2 3 4



She went away to Scotland for a holiday and could swallow ordinary food until July, 1932. In that month she was readmitted to hospital owing to sudden difficulty in swallowing. Œsophagoscopy was carried out immediately, and a hard scarred stricture with no evidence of ulceration was found at the site of the previous lesion. It was impossible to pass the œsophagoscope through this stricture, but a small bougie went through the aperture with ease for about 2 in. At that penetration the passage of the bougie was arrested, and with some difficulty an aperture was located and the instrument passed onwards towards the stomach (Fig. 3). Both strictures were then dilated, but owing to the excessive amount of bleeding it was impossible to examine the distal stricture very thoroughly. Seventeen hours later the patient suddenly collapsed when using the bed-pan, and she died within a few minutes. Hæmorrhage or perforation of the gullet appeared to be the immediate cause of death. Permission for autopsy was refused.

Case 4.—A male, aged 62, came to the Royal Southern Hospital in May, 1932. He stated that since eating some "salt fish" four days previously he had been unable to swallow either solids or fluids, and that he had experienced no difficulty before this. Radioscopy showed a complete hold-up of barium paste in the lower third of the œsophagus. He was admitted the same day and examined with the œsophagoscope. At 13 in. from the incisor teeth a large mass of barium and dry flakes of fish were found. This was removed with difficulty owing to its friable nature and considerable quantity. It was suspected at the time that there was an early submucous neoplasm of the posterior œsophageal wall at the site of impaction. On the following day the patient appeared to be swallowing normally, and the radiological report was as follows: "The outline of the œsophagus is *slightly* ragged at the site where the foreign body was impacted."

The patient was discharged three days later, and was instructed to report in four weeks' time. He failed to return to hospital until November, 1932, when he came up looking very ill and complaining that he could swallow fluids only and with difficulty. Radiological examination showed "irregularity of œsophagus at level of eighth and ninth dorsal vertebræ, with dilatation of œsophagus above. The X ray appearances point to malignant disease rather than adhesions or spasm." He was admitted in the following week, and on œsophagoscopy was found to have an ulcerating malignant stricture of the œsophagus 13½ in. from the incisor teeth. This was dilated and a Souttar's tube was inserted A week later the Souttar's tube was removed and a special rubber radium-carrying tube with 12 1·0 mg. radium needles was inserted into the stricture. The radium was removed in seven days' time. The radiological report on Dec. 23rd was: "There is now no appreciable 'hold-up' in the œsophagus." On Dec. 31st the patient was discharged, having gained 5½ lb. in weight and having been able to eat the usual dinner of turkey and plum pudding on Christmas Day.

He failed to report again until Feb. 28th, 1933. He then stated that after his discharge from hospital he had felt a soreness under the left side of his tongue. He thought that this must be due to a tooth, so he went to the Dental Hospital. He was referred from there to the Royal Infirmary, where he was found to be suffering from an epithelioma of the tongue (Fig. 4). Mr. R. Kennon has kindly allowed me to use the following particulars, which were supplied by Mr. R. Silverstone: "This patient was admitted on Feb. 17th under Mr. Kennon. He had an epithelioma on the left lateral side of the tongue extending from the sulcus terminalis forwards for about an inch. The mucosa over the dorsum of the swelling was normal, but it was ulcerated on the under surface, where there was some attachment to the floor of the mouth. Three 2·0 mg. radium needles were inserted for seven days. He was discharged on Feb. 27th, 1933."

Case 1 may be regarded as one of primary double carcinoma, and the interest of this condition lies in its rarity. According to Siebke's [1] statistics primary double cancer occurs about once in every 1000 autopsies. Abel,[2] describing carcinoma of the œsophagus, states that "occasional cases are recorded in which a primary growth has arisen in the œsophagus and a second primary growth has made its appearance in some other organ of the body. This, however, does not occur as often as would be expected." Polson and McIntosh [3] published the post-mortem findings of a case of multiple squamous carcinomata of the œsophagus in which there were multiple primary adenocarcinomata of the sigmoid colon. In their case the disease of the bowel had remained undiagnosed during life, as did the gastric lesion of Case 1 described above. Until the receipt of the pathologist's report the possibility of implantation of growth on the gastric mucous membrane from the œsophageal neoplasm by physiological propulsion had been considered. Abel writes that "it is very doubtful if spread by physiological propulsion ever occurs in either the œsophagus or the pharynx"; although Hoche [4] has described a case in which an epithelioma arose on a gastric ulcer in a patient suffering from carcinoma of the œsophagus.

Cases 2 and 3 illustrate the spread of œsophageal carcinoma by lymphatic permeation. This method of spread is similar to that which occurs in other organs, via the submucous lymphatics; the secondary growths are upshoots to the surface, and the intervening mucous membrane appears normal. In Polson and McIntosh's case there were one primary growth and three secondary growths in the œsophagus. Although this mode of spread may not be very uncommon it is rarely seen during life. Chevalier Jackson [5] saw two cases only in which there were two separate lesions in a series of 671 cases of carcinoma of the œsophagus. He was undecided if these were cases of implantation or true multiple primary foci. Probably they were both examples of lymphatic permeation. He writes: "The same condition may have existed in other cases, but it is only rarely that a cancerous growth is seen early enough to pass beyond it for exploration of the subjacent œsophagus." Souttar [6] mentions that such multiple nodules are of importance as they may produce multiple strictures. This did occur in Case 3. The patient was treated with radium for a malignant stricture. Three months later, when this growth appeared by œsophagoscopy to be healed by scar tissue, a second more distal stricture developed and proved fatal.

Case 4 is an example of spread by implantation. It is probable that at the œsophagoscopy in May or in November the under surface of the tongue was injured and that carcinomatous cells were implanted either from the instruments or during post-anæsthetic vomiting. Spread of œsophageal carcinoma by implantation is considered by Abel to be very rare. J. B. Oldham,[7] however, in a brief review of multiple new growths of the buccal cavity, points out that "implantation carcinoma of the mucosa of the alimentary canal has occurred on many occasions, and traumatised tissues are especially fertile beds for this development."

There can be no doubt that it is unusual to see such a large proportion of multiple new growths in so small a series of cases (4 in 40), particularly in œsophageal carcinoma, which as a rule is rapidly fatal once obstructive symptoms arise. There are two aspects of carcinoma of the œsophagus regarding which opinions are divergent: that of the degree of its malignancy and that of its metastasising tendency. The four cases reported above appear to support the doctrine of the great virulence of such growths.

In addition to the acknowledgment made in the text, I am indebted to Dr. J. H. Mather, hon. radiologist to the Royal Southern Hospital, for repeated examinations and reports; and also to Mr. W. Sanderson, hon. laryngologist, for permission to treat Cases 1, 3, and 4.

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MILE END HOSPITAL.—The hospitals' committee of the London County Council reports that the out-patient department at this institution is inadequate, the various sections of which it is composed being scattered in parts of old buildings which are ill-adapted for the purpose. A new one-story building is therefore to be erected at a cost of £7821, including accommodation for massage and remedial exercises, eye, throat, and dental rooms, an antenatal section, and the necessary appurtenances.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF ORTHOPÆDICS

At a meeting of this section on Oct. 3rd Mr. St. J. D. Buxton delivered a presidential address on

Injuries to Joints

The problems of particular interest at the present time, he said, fell into three groups: (1) the prevention and cure of adhesions resulting from injury; (2) the effect of an injury on an epiphysis and on articular cartilage; (3) the mechanical and operative treatment of fractures into joints. The usual line of detachment of a typical "separated epiphysis" did not involve the epiphysis itself, and if the displaced portion were accurately replaced no pathological changes were seen in the epiphysis. Complete separation of the head of the radius and separation of the capitellar epiphysis were not uncommon injuries in children. If manipulation failed to realign the parts operation was indicated, preferably open replacement without internal fixation. If the parts would not remain in position they must be fixed by bone or nail; catgut seldom held the fragments in children. Removal of fragments was most undesirable on account of the resulting deformity as the limb grew. If the nail or peg was to be removed as soon as the union had occurred, it was advantageous to use a round nail with a large rounded head which could be left just outside the cartilaginous surface. If the foreign body was to be left permanently, an autogenous-bone graft or beef-bone peg was preferable. It should be driven well home with a mallet and punch. The joint should be disturbed as little as possible in children, and if synovial membrane had to be divided it should be carried out near the reflection from the edge of the bone and in one line.

The principles governing the treatment of fractures into joints in adults were somewhat different, because there were no epiphyses, comminuted fractures were more frequent, and free movement was more difficult to obtain. Although the deformity resulting from such operations as the removal of the head of the radius was more than compensated for by the increased movement obtained, nevertheless replacement of fractured intra-articular bone was desirable if a useful joint was to be regained. The capitellum could often be fixed by catgut in the young adult. Factors influencing the amount of movement obtained were: the fixation of bony fragments, the severity of the primary injury, delay in operation, technique in dealing with torn synovial membrane and capsule, and after-treatment. Removal of portions of the fractured bone was definitely advantageous in patients past middle life. After T- and Y-shaped fractures into the elbow, full movement was seldom obtained; for the best result the articular cartilage at the lower end of the humerus should be brought into as good alignment as possible, and this was most easily done by means of a transverse screw. Admittedly, movement was more limited after this fixation than after an extra-articular method. The range of movement was not increased by breaking down adhesions under anæsthesia; the best after-treatment consisted of active movements and exercises. Physical treatment was essential for all adult cases.

OSTEOCHONDRITIS AND BLOOD-SUPPLY

The recent work of Leriche and Policard explained the pathological changes in injured epiphyses. Briefly, their theory was that anæmia of bone led to sclerosis, while hyperæmia led to decalcification. The changes in epiphyses after operation for fracture had the radiological appearance of osteochondritis. In children the ossified nucleus of the replaced portion suffered anæmia and therefore sclerosed, later becoming revascularised and regaining its normal shape. Pseudocoxalgia and lesions of epiphyses of the limb bones which showed comparable radiological changes had been classified under the name of osteochondritis. The head of the femur might show the changes of osteochondritis after Lorenz reduction for congenital dislocation of the hip; trauma to bone or blood-vessels or both must be the ætiological factor. Unfortunately, erroneous observations on the blood-supply to joints had replaced the original descriptions of William Hunter, and only recently had correct knowledge been obtained. The blood-supply of the epiphysis and the diaphysis were distinct, and no vessels penetrated the growth cartilage. The vessels of the diaphysis were virtually end arteries, and the plate of cartilage between it and the epiphysis was avascular. Articular cartilage was normally avascular, but synovial fluid was probably of value to it. When the growth cartilage calcified and was replaced by bone, an anastomosis between the blood-vessels of the epiphysis and diaphysis occurred. Obviously, therefore, the end of the bone in the adult was more richly supplied with blood-vessels; it did not show fragmentation and sclerosis, but far more often a decalcification due to injury or hyperæmia. In osteochondritis dissecans, however, the detached fragments might show changes due to anæmia. The alteration in the child's epiphysis was probably due to a lesion of its blood-supply. A congenital theory seemed out of place when a lesion comparable to pseudocoxalgia might appear in such a large number of epiphyses. The tendency of osteochondritis to recover better in the elbow than in the hip was undoubtedly due to the absence of weight passing through the joint surfaces. A joint examined radiologically after the injection of uroselectan showed no more than a joint examined by X rays directly. That injury was the primary cause of osteochondritis, by cutting off the blood-supply, was a theory that had certainly not been proved, but the changes in the cartilage in children seemed to be those of anæmia.

The principles of treatment of fractures into joints in children might be summed up as: (1) Reposition of the fragments as accurately as possible by manipulation; if operation was necessary the removal of bone and cartilage should be avoided. (2) The joints should be disturbed as little as possible, and synovial membrane should be divided in one line near its reflection. (3) If an intra-articular peg was needed, it should be removed subsequently, or so placed that it was wholly outside the joint cavity. The principles governing the treatment of the joints in adults differed in that: (1) Broken-off fragments should be removed if their reposition narrowed the joint space. (2) Extra-articular fixation was preferable, provided that accurate alignment of articular cartilage could be obtained. (3) Physical treatment was essential whether the case had been treated surgically or not.

Physiological Society.—The next meeting of this society will be held in the Sherrington school of physiology, St. Thomas's Hospital, on Saturday, Oct. 21st. A joint discussion with the food group will take place at the London School of Hygiene and Tropical Medicine on the previous day.

REVIEWS AND NOTICES OF BOOKS

The Thyroid Gland, its Chemistry and Physiology

By CHARLES ROBERT HARINGTON, M.A., Ph.D., F.R.S., Professor of Pathological Chemistry in the University of London. London: Humphrey Milford, Oxford University Press. 1933. Pp. 222. 15s.

THE complexity of the internal secretions is ever-increasing, as shown by the fact that it is now only possible to treat with one hormone in one particular volume. The amount of literature accumulating is particularly unwieldy on hormones such as those of the sex glands, but as has been pointed out in these columns this has been solved by the excellent work under the editorship of Prof. Allen, entitled "Sex and Internal Secretions."

Prof. Harington has rendered a valuable service in adding what might be termed a standard work to the library of the worker interested in hormones. The history of our knowledge of the internal secretion of the thyroid gland stretches back into the very distant past. Prof. Harington wastes no time in tracing the gradual evolution of present theories from their tentative beginnings, but plunges abruptly into an account of the general physiology of the thyroid gland as far as it is now worked out. The second chapter is concerned with the chemistry of the thyroid and the iodine compounds which it contains, with a full review of various preparations such as iodothyrin and thyroglobulin. It is debatable whether the amount of work which the compilation of this section must have entailed is really worth while, since the exact chemical nature of the compounds described is still uncertain. The third chapter deals with simple goitre and cretinism; Prof. Harington's outlook is fundamentally that of an organic chemist, and these clinical conditions seem to interest him less than those which touch his own work more closely. Possibly in a future edition he could here enlist the collaboration of an experienced clinician. It is from the fourth chapter onwards that he comes to problems which have long excited his interest and to the solution of which he has contributed much—the isolation of the iodine compounds of the thyroid gland, the general chemistry of thyroxine, its chemical constitution, and methods of assay. It is disappointing to find in his account of the inter-relationship between the thyroid and other endocrine organs no reference to the recent publications on the question of the thyrotropic hormone. In his final chapter on the biochemical aspects of Graves's disease too little space has been devoted to a discussion of the relative value of the views of Marine and Plummer. We hope Prof. Harington will deal with these interesting problems at greater length in his next edition. The value of the work as it stands lies in its sound analysis of the biochemical and purely chemical aspects of the thyroid gland, and it will form a monograph of permanent value.

Neurology: Psychiatry

Edited (1) by PETER BASSOE, (2) by FRANKLIN G. EBAUGH. Practical Medicine Series of Year Books. Series 1932. Chicago: Year Book Publishers. Pp. 488. $2.25.

THE nearest equivalents in English to the comprehensive abstracts of the current literature of special branches of medicine published in a German Zentralblatt or Bericht are the reviews and summaries in the special journals, and the Year Book Series to which this volume belongs. The series provides a fair guide to the chief lines of advance and interest during the period covered. Unfortunately it is not clear on what principles articles are selected for inclusion—whether intrinsic value, country and language of publication, or nature of subject are the deciding factors. In the neurological section of this volume the question is of less interest because the ground is covered methodically and with no particular bias in favour of American writers. It is an excellent collection, with the minimum of comment, of the more significant clinical and pathological papers that have appeared during 1932. The shorter psychiatric section, however, is more open to objection. The comments are not so much critical estimates as naïve or didactic expansions. Many important papers that appeared in foreign journals are omitted, but room is found for some articles in which nothing is said but platitudes, if the summary is to be trusted, and the fullest abstracts are of general papers bearing on administration, education, and sociology. Some of the summaries are unintelligible, e.g., that of Lingjaerde's article on schizophrenia (p. 423) or the report of the Bonn meeting (p. 353). The book will thus be really useful to neurologists and less so to psychiatrists.

Human Mentality

An Outline of General Psychiatry. By BROR GADELIUS. Copenhagen: Levin and Munksgaard. London: Humphrey Milford, Oxford University Press. 1933. Pp. 620. 30s.

THIS large and well-produced book by the professor of psychiatry at Stockholm is evidently the fruit of much reading and experience. Intended as a general guide to normal as well as to morbid psychological phenomena, it is indicative of the value of a mode of thought which constantly insists on the relation between mental disorder and healthy life. After an introduction dealing with the history of psychiatry and its working methods, the functional structure of mental life is examined in 13 chapters, making up half the book. In the next section the causation of mental disorders, especially the constitutional and hereditary factors, is expounded; the third section covers the principles of modern treatment and the forensic aspects of psychiatry. A lengthy chapter in this last section is devoted to a severely critical examination by Prof. Gadelius of the theory and practice of psycho-analysis. The book is learned and thoughtful and probably deals more fully and satisfactorily with its subject than any other work available in English. Its length is largely due to the discursive style which the author has deliberately chosen to avoid a dry, unattractive mode of exposition. Many psychiatrists who will find the book profitable to read would doubtless have preferred a more disciplined and succinct presentation, making greater demands on the reader's attention but less on his time. The findings of recent research in many countries have been taken into account by Dr. Gadelius in sufficient measure to ensure for his book a conservative modernity. A translation of the second part of the work, which has so far appeared only in Swedish, is to be looked for; it will deal with special psychiatry. The English of this volume is correct and readable.

Rose and Carless' Surgery

Fourteenth edition. By Cecil P. G. Wakeley, F.R.C.S., F.R.S. Edin., Surgeon, King's College Hospital, Belgrave Hospital for Children, and West End Hospital for Diseases of the Nervous System; and John B. Hunter, M.C., M.Ch., F.R.C.S., Surgeon, King's College Hospital, and to Royal Northern Hospital and Royal Chest Hospital. London: Baillière, Tindall and Cox. 1933. Pp. 1487. 30*s.*

When a text-book has been an outstanding success with generations of students it requires a certain amount of courage to alter its character even in small degree. Rose and Carless at its birth was eagerly welcomed by the undergraduate, and in its maturity remained in almost undiminished favour. It has been steadily kept up to date in each of the subsequent 13 editions, but its general arrangement and make-up has been unchanged. With growth of knowledge and alteration of outlook this scheme could obviously not persist indefinitely if the book was to retain its popularity. The new editors, Mr. C. P. G. Wakeley and Mr. J. B. Hunter, have recognised this and laid their plans accordingly. They have revised where revision seemed necessary, and retained that which they deemed sound. The result is a new text-book of surgery of the best modern type. There has been considerable alteration, particularly in the chapter on thoracic surgery, and new work, such as that on the sympathetic system, has been incorporated. The old arrangement by which reproductions of radiographs were collected together at the end was never very satisfactory. They are now interpolated throughout the book; this has become possible because suitable paper has been selected for this purpose. A large number of new illustrations have been added, and many appear in colour. When, for the sake of completeness, methods must be mentioned without being fully explained, the difficulty of conveying to the student a right perspective is a real one; it has not been overcome in every place, but probably the students' text-book can be made immune from criticism on this score. The student will not get his values very far out by reading this book, for it reflects faithfully, and almost uniformly, the considered judgments of leading British surgeons.

Practical Anæsthesia

By the Anæsthetic Staff of the Alfred Hospital, Melbourne. Australasia Medical Publishing Co. 1933. Pp. 249. 7*s.* 6*d.*

This little book is the first of its kind that we have met; each chapter is from the pen of a different author writing on a branch of the practice with which he is specially competent to deal. The result is that the chapters are concise, dogmatic, and full of practical directions likely to be of the greatest service to students and house officers. The book is not intended for the specialist and it scarcely touches on theory or even on physiology. Each chapter is followed by a short bibliography, with which the only fault we have to find is that it is completely American, even when the methods dealt with were first made known by British workers. One of the most valuable chapters relates to anæsthetic mortality, the available statistics being examined and assessed at their proper values. In an earlier chapter is excellent advice which might with advantage be laid to heart by some anæsthetists in London schools. It says that the student should be taught to practise giving the ordinary "rag and bottle" anæsthetic until he is thoroughly efficient in this simplest of anæsthetic techniques, and only then be allowed to attempt the more complicated methods and apparatus. We do not agree with every rule laid down; for example in the presence of respiratory obstruction we believe chloroform and oxygen is sometimes a safer anæsthetic than nitrous oxide. Nor have we as much faith in hard-and-fast tests of pre-operative risk and of shock as is here expressed. But taken as a whole we regard the book as a valuable and reliable guide for any young worker in anæsthetics. It is the first of a series of monographs from the Baker Institute of Medical Research.

Sexualpathologie

By Prof. V. Kafka. Leipzig und Wien: Franz Deuticke. Pp. 170. M.6.

These lectures were delivered to students of the medical, legal, and philosophical faculties in Hamburg. Prof. Kafka has succeeded in giving information about the various forms in which sexual activity may manifest itself without becoming lost in detail or entangled in ethical and scientific problems. The presentation is concise, matter of fact, clear, and free from dubious speculation; the author is a psychiatrist and shows an appropriate grasp of the setting of sexual behaviour, whether "normal" or not. The opening chapter deals with variations and substitutions that can hardly be regarded as abnormal, though far from universal, e.g., vaginismus, ejaculatio præcox; a chapter on masturbation follows, and then a lengthy one, occupying the greater part of the book, on the pathological forms of sexuality, differentiated according to whether or not they have a recognisable somatic foundation. The subdivision then is into quantitative and qualitative disturbances. The pathological forms found in the insane and in criminals are discussed, and a chapter on social and legal aspects of the subject concludes the book.

Recent Advances in Plant Physiology

Second edition. By E. C. Barton-Wright, M.Sc. Lond., F.R.S.E., Chief Assistant at the Scottish Society for Research in Plant Breeding. London: J. and A. Churchill. 1933. With 54 illustrations. Pp. 341. 12*s.* 6*d.*

In this edition Mr. Barton-Wright has not only brought his subject matter up to date but has wisely taken the opportunity of recasting the book and eliminating a good deal of some descriptions of controversial work. There are now nine chapters, of which the first, entitled Adsorption of Water and Transpiration, contains a digest of the two first chapters of the earlier edition. Then follow two chapters on carbon assimilation and nitrogen metabolism which, apart from a few minor additions, are essentially the same as before. Chapter IV., on the raw materials of plant nutrition, is entirely new and gives a summary of the significance of the various elements occurring in plants. The next chapter, entitled Transpiration, gives a very full account of the valuable researches of Mason and Maskell on the transport of carbohydrates, nitrogenous products, and salts in the plant. Chapter VI., on respiration, is little altered. In the last three chapters devoted to growth, the text has been almost entirely rewritten. The last section, dealing with accessory growth factors and related problems, is likely to be of most interest to our readers giving as it does a summary of the work done from the botanical side on auximones, hormones, and similar bodies.

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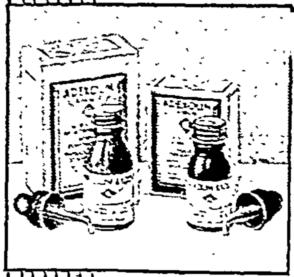

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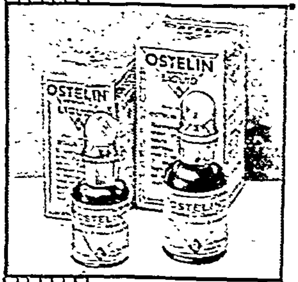
Price unchanged—concentration unchanged.

2 oz. bottles now 7/6 (formerly 10/–)
4 oz. bottles now 12/6 (formerly 16/8)
8 oz. bottles now 22/6 (formerly 27/9)

N.B.—The prices of Adexolin Capsules remain unchanged: 25 2/9, 100 8/6.

Adexolin liquid contains vitamins A and D in the proportions that are natural to high-grade cod-liver oil but in almost tasteless and inodorous form. Its potency—namely, 20 times cod-liver oil—is calculated to permit of the greatest flexibility of dosage.



OSTELIN LIQUID

2/6 phials increased from 8cc. to ½ oz.
Price unchanged—concentration unchanged.

2 oz. bottles now 7/6 (formerly 10/–)
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8 oz. bottles now 22/6 (formerly 27/9)

Ostelin Liquid has 50 times the vitamin D potency of high-grade cod-liver oil. It is the only vitamin D preparation that is miscible with water. Having no incompatibilities it can readily be dispensed with other therapeutic agents. Add Ostelin Liquid to all mixtures containing calcium and phosphorus.

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EVER since its introduction, the potency of Streptococcus Antitoxin (Scarlatina) supplied by Parke, Davis & Co. has been denoted in terms of units based on neutralisation of specific toxin, as shown by skin tests on the susceptible human subject.

¶ This method of assay is subject to a treble check—first in our own laboratories, secondly at the hands of the Scarlet Fever Committee, and thirdly at the laboratories of the National Institute of Health, Washington.

¶ Streptococcus Antitoxin (Scarlatina) P., D. & Co. is indicated for either intramuscular or intravenous injection in the treatment of all types of scarlet fever.

¶ The results from the use of the antitoxin are shown by the arrest of the acute stage of the disease, the almost complete absence of complications, and the reduction of the period of morbidity. The antitoxin is also indicated for the temporary immunization of contacts.

¶ This antitoxin is also widely used in the treatment of other acute toxæmias resulting from infection with the *Streptococcus hæmolyticus.*

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Streptococcus Antitoxin (Scarlatina) P., D. & Co.,
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THE LANCET

LONDON: SATURDAY, OCTOBER 7, 1933

EPIDEMIC ENCEPHALITIS RETURNS?

THE news of a serious outbreak of encephalitis in the city and county of St. Louis is disquieting. Though sporadic cases of the disease known as encephalitis lethargica (sleepy sickness) are still being notified in many countries, no epidemic outbreak comparable in severity or extent with those which occurred during and shortly after the war has been recorded within the last few years. There was reason to hope, therefore, that its epidemicity had ceased, and as the term encephalitis includes many conditions of different origin and significance, the early reports of the illness at St. Louis were naturally treated with reserve. From the details at first available[1] it was impossible to form an opinion about its real nature, but much further information has now been given by Surgeon A. P. **LEAKE**,[2] of the United States public health service, who is in charge of the investigation. It appears that during the five weeks August 7th to Sept. 10th 656 cases of encephalitis have been reported in St. Louis city and county—an incidence of about 1 in 1000 of the population. The case-fatality rate has been about 20 per cent. Nearly two-thirds of the cases were in persons of 35 years of age or over; a quarter in persons between 15 and 34; and the small remainder (13 per cent.) below this age. The recovery-rate in the younger groups has been relatively high compared with the older. The case-fatality in the oldest group (55 and upwards) has been much the highest.

Clinically the outbreak has resembled other epidemics of encephalitis in its general features. As a rule the onset is fairly sudden with more or less general febrile symptoms which usually acquire definite nervous characters within two or three days; sometimes nervous symptoms are the first indication of disease. Disorders of sleep and oculomotor disturbances, which were so often the cardinal diagnostic symptoms in former epidemics, have not been common; on the other hand, demonstrable involvement of the meninges, rare in previous outbreaks, has been almost constant in the recognisable cases. The neck usually becomes definitely stiff at some stage; the cells in the spinal fluid are more numerous than normal, chiefly lymphocytes; lumbar puncture often relieves the headache permanently; transient paralyses have been noted. The mental changes are those of confusion, stupor, or even coma rather than lethargy and sleep. Recovery when it takes place does so more promptly and completely than it did in previous outbreaks. As regards the pathological lesions, **LEAKE** states that they "are similar in nature to those found in other epidemics of encephalitis (not the post-infectious demyelination encephalitis), but are more diffuse through the brain and meninges without special localisation in the basal ganglions and brain stem." Animal inoculations have been made with material of various kinds from acute cases, and significant symptoms have been obtained. In three monkeys, thus inoculated, lesions were found in the central nervous system "consistent with the picture found in human epidemic encephalitis." These and other experimental observations are, however, still in progress, and it will be some time before any definite deductions from them are permissible.

At the present stage it would be unwise to offer any decided opinion whether the St. Louis outbreak is or is not a recurrence in epidemic form of lethargic encephalitis. In at least three respects there are slight but definite points of difference: these are first its seasonal incidence; next its age-incidence and age-mortality; and thirdly, the distribution of nervous symptoms. In the previous history of this disease it has been remarkable how constantly, in almost all countries, the outbreaks could be looked for in or about the first quarter of the year. In this respect the St. Louis outbreak is not true to type; on the other hand, it cannot be described as unique, for there was an outbreak of some magnitude in Poland in August, 1922, and there have been others during the summer months in Japan between 1924 and 1927. Further, the age-incidence in the present epidemic, and the high case-fatality in older persons, although in strong contrast with those in most other outbreaks, bears a somewhat close similarity to those of the Japanese summer epidemics. The comparative rarity of disturbances of sleep and of the oculomotor apparatus, together with the almost constant presence of meningeal symptoms, are obviously the opposite of previous experiences. But here again it is necessary to be cautious in jumping at conclusions from a difference in symptomatology alone; for the successive outbreaks of a decade ago showed striking differences in the grouping of their nervous symptoms.

LEAKE inclines to the opinion that the St. Louis outbreak, in its clinical aspect, resembles most closely the one which appeared around the Inland Sea of Japan in 1924. This differed in so many ways from other outbreaks of encephalitis in that country that R. **KANEKO** and Y. **AOKI**[3] were led to distinguish two types: (*a*) occurring in the winter months, and clinically like the European type; and (*b*) occurring in late summer, and differing in various ways from the form hitherto seen in Europe or the United States. Such a clear-cut difference between the two types is not, however, accepted by all authorities. Whether there are in fact two types and whether this distinction is one of real importance from the point of view of prognosis can only be known with certainty when time has elapsed and one can see what, if any, later manifestations develop. It is sincerely to be hoped that there may prove to be such differences, and that one of them may be the absence of those later manifestations which Type A certainly leaves in its trail. Meanwhile the skill and resources of the United States public health service are being brought to bear on the various problems to which the outbreak has given rise, and we must trust that in this way knowledge will be acquired which will help to make such happenings preventable.

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[1] See THE LANCET, Sept. 16th, p. 670.

[2] Jour. Amer. Med. Assoc., Sept. 16th, p. 928.

[3] Ergebn. d. inn. Med. u. Kinderheilk., 1928, xxxiv., 342; Japan. Med. World, 1925, v., 237.

ACADEMIC FREEDOM

IT would not be easy to exaggerate the debt English universities owe to German inspiration. A century ago our ancient universities, still hampered by obsolete religious "tests" did nothing whatever for the encouragement of the biological sciences, hardly anything for the chemical sciences, and even faltered in their cultivation of the ancient liberal arts. "What is done here for the classics?" asked Peacock's character, the Rev. Dr. Folliott, at Oxford in 1831, "Reprinting German editions on better paper. A great boast, verily! What for mathematics? What for metaphysics? What for history? What for anything worth knowing? This was a seat of learning in the days of Friar Bacon. But the friar is gone and his learning with him." Peacock was not an unbiased judge, but Mark Pattison's reminiscences of Oxford in the 'thirties are not much more complimentary. Some 20 years earlier a few great Germans, led by HUMBOLDT, began to rebuild the academic life of their country on the basis of complete intellectual freedom. In their view a university was the temple of a religion, the ethic of which was the pursuit of knowledge for its own sake, the qualifications for its priesthood, intellectual ability and honesty of purpose. Within a generation the least of the German universities was doing more for science and scholarship than Oxford and Cambridge together had been doing at the beginning of the nineteenth century. Our grandparents were not slow to learn the lesson. The ancient universities were changed more between 1850 and the present time than from the renaissance to the nineteenth century. Dr. Folliott, of 1931, would find much more to admire in Oxford than the friar's nose which his predecessor greeted as "the only thing to which I shall take off my hat, in all this Babylon of buried literature." Other universities have grown up which can sustain a comparison with their elder sisters and with the new foundations of the Humboldt era, Berlin, Breslau, Bonn. For this great revolution we have to thank not slavish imitation of German academic organisation but reconstruction in the spirit of HUMBOLDT's work, the spirit of intellectual freedom.

From HUMBOLDT's own country this spirit has temporarily departed; other tests than those of intellectual ability and honesty are now imposed on university teachers. We who were academically the pupils of the Germany of HUMBOLDT have now the duty of trying to repay part of the debt we owe by keeping alive the religion which inspired those who inspired us. As members of the senior secular faculty, medical men are in a special manner guardians of the intellectual rights of humanity. No science has been more hampered by ignorance and prejudice than that of medicine. There are still in all countries many who would, if they could, make medical research impossible. From the moment that the idea of *any* tests or qualifications for university teachers other than those of ability and intellectual honesty is entertained, decay must begin. There is not perhaps much danger of a racial, hardly more of a political, test being imposed in our universities. There is danger of *practical* tests. "Cleverness, talent, skill, fluency, memory, all these are understood and rated in the market. A cultivated mind just because it is above all price is apt to be overlooked altogether." To many of us it seems that this warning of Mark Pattison has already been forgotten by various reformers of medical curricula, and not invariably remembered by the patrons of applied research.

For these reasons the ostensibly abstract ideal of academic freedom seems to us one of the most practically important things in the world. In THE LANCET of May 27th we referred to the newly constituted Academic Assistance Council,[1] formed to help those scholars and men of science who on racial or political grounds have been deprived of their means of living in their own countries, to continue elsewhere work which civilised peoples used to think should be unhampered by political or racial considerations. The executive committee of the Council, upon which the medical sciences are represented by Prof. MAJOR GREENWOOD, F.R.S., Prof. A. V. HILL, F.R.S., and Prof. CHARLES SINGER, are faced with a colossal task. There are already on the records of the Council the names of nearly 1000 men and women who have either been deprived of their teaching and research posts or are in imminent danger of dismissal. Of these more than 420 are full professors in universities or teaching institutions of university rank, many of them investigators who have already done work of great importance. The fact that in this list the medical profession is strongly represented is not the only reason why we commend the work of the Academic Assistance Council to the notice of our readers and all whom our readers can influence. The issue at stake is more serious even than that of the hardships inflicted on our professional colleagues. If we do *not* honour abstract science and pure scholarship, not merely in prize-day orations but by deeds—and we can hardly honour them more acceptably than by helping distressed scholars and investigators—applied science will very soon cease to be science at all. To members of a learned profession these considerations must be of paramount importance.

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[1] The hon. secs. of the Academic Assistance Council are Sir Wm. H. Beveridge and Prof. C. S. Gibson, F.R.S., and its offices at the rooms of the Royal Society, Burlington House, London, W.1.

THE FLEXIBLE GASTROSCOPE

THE history of gastroscopy is the record of a sustained effort to overcome difficulties which appeared to be almost insurmountable. When Nitze had perfected the cystoscope it seemed to be a fairly simple problem to adapt the principle of its construction to the visual inspection of the interior of the stomach, since the course of the œsophagus is much nearer a straight line than that of the urethra. Yet the fragility of its walls and its inadaptability to change of direction was found to render the introduction of a straight tube a dangerous procedure. More than 50 years ago, however, Mickulicz was actually able to see a carcinoma of the stomach through a tube introduced down the œsophagus. From that day to this, enterprising surgeons have never ceased striving to make the method safe; noteworthy amongst the enthusiasts were Rosenheim, Kelling, Kuttner, Schindler, Sternberg, Korbsch, and in this country, William Hill. By reducing the calibre of the instrument, by making a flexible tube that could be straightened mechanically after introduction, by affixing a soft flexible extremity, and by other means advances were made towards the goal, but no real success was attained until the remarkable work of Schindler and Wolff reached fruition about a year ago. The situation at that time is well described by Prof. K. Gutzeit, of Breslau,[1] who writes an account of his experience of 1200 gastroscopies. In the hands of a few experienced technicians using the utmost care gastroscopy with the instruments then available was not only permissible, but indeed well worth while in suitable cases. The beautiful optical and electrical arrangements enabled the aspects of the interior of the stomach in various states of disease to be mapped out with exactitude, and these records are of permanent value. But most surgeons held that the method carried an unjustifiable risk. Many accidental perforations, even in skilled hands, had occurred at the upper end of the œsophagus or just where it turns through the diaphragm.

There the matter stood until that indefatigable gastroscopist R. Schindler, working with an optical physicist, Julius Wolff, invented an entirely new optical system.[2] The lower part of the new gastroscope for about 12–15 inches is composed of a flexible rubber-covered tube containing a row of biconvex lenses in contact. By this remarkable arrangement an image is obtained even when the axis of the tube is bent into a very considerable curve. The instrument can be passed with as little distress to the patient and as little danger as an ordinary sized stomach-tube. The operation is carried out after cocanisation of the pharynx with the patient in the left lateral position. The stomach is irrigated until it is clean, and then inflated with air for inspection. To an observer unaccustomed to using the rigid Schindler instrument the image appears remarkably clear and bright, but the experienced gastroscopist can detect a little distortion and he also notices some diminution of illumination—not surprising considering the make-up of the optical system.

Thus what appeared impossible has been achieved. The operator is able to look round a bend with a flexible optical instrument, the light rays being deviated at will to reach the observer's eye. One other great advantage has been claimed for the flexible instrument. As the rubber tip reaches the greater curvature of the stomach it is deviated along this curve so that a view of the pylorus is obtainable in cases in which such a view could not possibly be had with the rigid instrument. This is because with the flexible instrument the field of view is not encroached upon by the lesser curvature which may obscure the pylorus when the rigid tube is used and has caused difficulty in obtaining complete pictures with intragastric photography. It seems likely that the new instrument will be widely used. All the pioneer descriptive work has already been done, and, with very little experience and the use of existing atlases, confidence in diagnosis should soon be attained. The results of such experience will eagerly be awaited in this country, particularly the question of whether an early diagnosis of carcinoma can be made, this being the gastric lesion where radiography fails more often than in any other. It may also be hoped with confidence that the problem of gastritis and its relation to the various dyspepsias may now shortly be disentangled from the chaos into which it has fallen.

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[1] Med. Klin., 1933, xxix., 965.

[2] Münch. med. Woch., 1932, lxxix., 1268.

THE MEDICAL WITNESS

MEETING at Johannesburg last June to hear and discuss a frank and friendly paper on the Medical Witness, the medical practitioners of the Southern Transvaal were not spared certain home truths.[1] The learned advocate who read the paper said that, in his experience both in the law courts and in extra-judicial proceedings, doctors were prepared to testify to medical facts somewhat lightly. He added handsomely that this fault was by no means confined to doctors and that it often arose from the noblest motives. He had been struck with the facility with which both sides in a case could produce an abundance of conflicting medical testimony as to the existence or non-existence of a particular disability or as to the cause where the existence was admitted. He gently referred also to the fact that the medical profession itself has occasionally to remind its members of the impropriety of lax certification. These considerations, he thought, justified the legal preference for oral cross-examination as a means of arriving at the truth and its reluctance to rely on written statements. Documentary reports, he observed, cannot always be sure of dealing with the relevant issues of litigation since the issues are often not crystallised until the trial is nearly completed.

Dr. JOSEPH J. LEVIN, initiating discussion on the points covered by the paper, conceded that doctors are notoriously bad witnesses, though he kept up his hearers' spirits by adding that lawyers were very ignorant of everything pertaining to the practice of medicine and the art of surgery. Doctors, he said, ought to be taught how to answer questions about what they really do know, and lawyers how to ask questions about what they really do not know. Dr. Levin reiterated his advice to medical students not to be ashamed of answering "I do not know" except when questioned on matters of fact. The learned advocate, by-the-by, had previously suggested a useful variant of this formula—namely, "That is a question I should like time to consider." Dr. Levin went on to quote an authority on medical jurisprudence who tells his readers that most medical men enjoy being called into court to testify as experts. They feel it an honour and a compliment to give evidence in this capacity. If they have no special knowledge of the subject, either they will boldly qualify as expert witnesses by reading up the matter hurriedly in the few days before the trial, or else they will enter the court unprepared for questions put by cross-examining counsel who have been fortified by consultation with real experts. In either case professional ignorance may be exposed to judge and jury. It is not improper to claim expert knowledge of special subjects, but there need be no loss of professional standing in disclaiming the possession of special knowledge. "Eminence is not arrived at in a day, nor without labour"; while we can expect average skill from the general practitioner, we have the right to expect the highest kind of knowledge from the expert.

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[1] South African Med. Jour., August 12th, p. 499.

Some of the points covered by the discussion were familiar enough—the legal view of medical privilege, the practice of calling a doctor as a witness of facts and then extracting from him the opinions of an expert, the use of medical assessors and the possibility of having experts called by the court instead of by the parties. In England the "new procedure" of the High Court offers some opportunity of pooling expert evidence and making it available for both sides before trial, but only scant use has so far been made of this facility. A Chancery judge remarked not long ago that he hoped the time would soon arrive when the evidence to be given by an expert witness would be shown to the opposite side before trial. Other Chancery judges have attempted to limit the number of experts to be called on either side. One of the Official Referees at the law courts frequently invites the parties to agree to abide by the opinions and conclusions of a neutral expert to be appointed by the court. Such a course saves much time and expense in cases where masses of figures and details are in question. These are straws which show which way the wind blows, but we are still some way off the prospect of a universal system of medical referees to relieve the judges of discriminating between the conflicting testimony of medical experts. Judicial independence is jealous of suggested delegations of judicial authority. The Workmen's Compensation Acts represent perhaps the furthest limits to which such a system can as yet be carried.

ANNOTATIONS

IMMUNISATION AGAINST DIPHTHERIA WITH A SINGLE DOSE OF ANTIGEN

THOUGH the routine methods of active immunisation against diphtheria are very much as they were five years ago, a number of experimental advances have taken place which must sooner or later modify current practice. The main desiderata in diphtheria immunisation are that the number of injections should be cut down to a minimum (preferably to one injection) and that the preparations used should cause no disturbance, local or general, in the persons injected. These two requirements are unfortunately not easy to reconcile. Antigens of high theoretical potency can now be prepared, but in achieving high potency there is, ipso facto, an added tendency to produce undesirable reactions. Some of the factors responsible for reactions must be closely related *if not identical with the antigenic principle itself,* since methods of purification which eliminate upwards of 90 per cent. of the non-antigenic constituents of toxin or toxoid fail to provide us with a material which may be relied upon not to produce reactions. It is an old view that antigenic potency can be estimated by the combining power of toxin or toxoid with antitoxin. The Ramon flocculation method which provides a convenient means of estimating the combining power of toxoid has been of the greatest assistance in the preparation of high value antigens. Ramon constantly stresses in his writings the importance of using antigens having a high flocculation value. Pope and his colleagues[1] have succeeded in preparing unpurified toxins and toxoids many *times more potent than those available a few years* ago, and other workers have used chemical methods of purification to prepare antigens of hitherto undreamt-of potency. The present problem is not so much to prepare high value antigens as to use them.

Improvements in the technique of preparation of antigens have led to improvement in the practical immunisation of human beings, but by no means to the extent which at first sight might be expected. Active immunity depends quite as much on the proper application of the antigenic stimulus as on the intrinsic potency of the antigen and a single dose of an antigen, however high its Lf. value, does not readily cause the development of a significant active immunity. By the use of preparations which are slowly absorbed such as toxoid-antitoxin floccules (T.A.F.) or alum toxoid, it is possible to maintain a *more or less continuous antigenic stimulus, and the* results obtained with such materials have been very promising. A material, however, which resists tissue absorption is also likely to act as an irritant, and alum-toxoid, at least, is in the position that while it is theoretically a much better antigen than those in current use it is too irritating for routine employment. T.A.F. still probably remains the best all-round reagent for active immunisation, but it is difficult to prepare and costly. Recent workers both in this country and abroad have been experimenting in the direction of cutting down the number of injections in immunisation. Ramon and his colleagues[2] and M. Nicolle[3] have recently reported successful results with two doses of toxoid, and indeed it ought to be possible even with current commercial preparations to immunise with two doses if proper care is taken in timing the injections. Quite lately a number of observers have reported the successful use of one injection. C. Jensen,[4] using a single dose of an alum-concentrated toxoid containing 150 Lf. per c.cm., succeeded in immunising 20 out of 21 children within a month. C. Terni[5] in Italy has reported the successful immunisation of 77 per cent. of 323 children treated with one dose. In America Graham, Murphree, and Gill[6] were successful in 92·4 per cent. of cases, and more recently H. W. Straus,[7] using a purified toxoid incorporated with lanoline, succeeded in rendering 99 per cent. of 103 subjects immune within two months of a single injection. Much more work, no doubt, must be done before a "one injection" immunisation against diphtheria can become a routine measure, but these results encourage us to think that considerable improvements in routine methods are in sight.

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[1] Jour. Path. and Bact., 1932, xxxv., 573.

[2] Bull. Off. Internat. d'hyg. pub., 1933, xxv., 1405.

[3] Compt. rend. Soc. de biol., 1933, cxiii., 1467.

SPECIAL DISABILITY IN WRITING

KNOWLEDGE of the association mechanisms of speech and related functions is still far from complete and the anatomical loci of these functions are still indefinite. Dr. Samuel T. Orton of New York has given much time to clinical study of these functions and particularly of their pathological aberrations, and he is now the joint author with Miss Anna Gillingham of an article published in the *Bulletin* of the Neurological Institute of New York dealing specifically with abnormalities in writing. Dr. Orton has, in previously published work noticed in these columns,[8] suggested that failure to achieve unilateral dominance, which must be regarded as the normal adult condition, accounts for retardation in learning to read in children otherwise intelligent, and this new study hints at a similar conclusion with regard to writing incapacities. A small proportion of the cases described are, it is true, otherwise explicable. In one group there is evidence of damage to the pyramidal or pre-pyramidal motor system, so that the writing incapacity is only part of a more general motor dysfunction. An interesting group is made up of those who, being left-handed, have been taught to write with their right hands while still using the left for other activities—a policy successful in some instances but not in others. When unsuccessful, transfer of the training to the hand which the child naturally uses resulted in great improvement. The authors are not prepared to say whether in every case the left-handed child should or should not be trained to write with the right hand, but they are obviously impressed by the difficulty, both in speech and writing, caused in certain cases, and they suggest that a child failing to attain legibility or speed with the right hand should certainly have the left hand trained. An indispensable condition is that in the training of the left hand the position of the paper and the slant of the letter-axis in writing should be considered—points, they allege, which are too generally forgotten. The largest group, however, consists of children in whom the fundamental element is delay or failure to acquire a definite unilateral dominance. In some of these there were also reading and spelling difficulties, in others stammering, and in still others difficulty in acquiring other complex motor patterns as well as writing—a congenital apraxia. Essentially they are children intermediate between pure dextrals and pure sinistrals—cases, that is, of incomplete dominance of either right or left—so that they may show crossed patterns of handedness and eyedness, e.g., they may be left-handed and right-eyed. The writers conclude with a reminder that the presence of these or other defects in language faculty may be isolated phenomena and should not be made the basis for an unjust estimate of a child's general capacities.

ÆTIOLOGY OF PERINEPHRIC ABSCESS

IT is recognised that suppuration in the fatty tissue which surrounds the kidney outside its capsule proper—i.e., in the so-called perinephrium—may have two possible sources of origin. It may be due to a direct spread of suppuration from a septic focus in the kidney or from inflammation of a retroperitoneal organ, such as a retrocæcal appendix; or it may be embolic in origin, the so-called "primary" type of perinephric abscess. Certain writers on the subject, notably V. C. Hunt,[1] have tried to establish the view that suppuration in the perinephrium is never "primary" in the generally accepted sense of the word, but that in cases exhibiting no symptoms referable to the kidney and recovering completely after simple drainage of the abscess, the source of infection has been a cortical renal abscess rupturing into the perinephrium. Since this variety of perinephric abscess tends to clear up promptly when drainage has been established very few cases come to autopsy, and it is extremely difficult to decide its origin. As V. Vermooten[2] points out in a recent paper, there can be no doubt that cortical abscesses in the kidney do occur and do rupture. He cites one case of his own and 26 cases reported by Hunt. Nevertheless Vermooten is convinced by a series of personal observations, clinical, anatomical, and pathological, that suppuration in the perinephrium is often a definite disease entity and, apart from the fact that the perinephrium surrounds the kidney, need have no relation to the kidney. His one fatal case, in a series of 11, showed at autopsy both kidneys surrounded by pus but intact and without evidence of cortical infection. Vermooten believes that here a staphylococcal bacteræmia has led to metastatic staphylococcal abscesses by embolic infection of the end arteries of the perinephrium; branches to the perinephrium from the renal, lumbar, and phrenic vessels, and an occasional branch from the mesenteric artery have been traced. Vermooten would like to distinguish the two types of suppuration by reserving the term perinephric for the abscess spreading by direct infection from the kidney or other neighbouring organ; the "primary" or embolic abscess he would call perinephritic. The two terms are so much alike, however, and have been for so long interchangeable, that it is doubtful whether any useful purpose would be served by such a differentiation in their use. On the other hand, the distinction between the two types of lesion has great clinical importance, and a nomenclature that would emphasise this distinction would be all to the good. The important points in the differential diagnosis of suppuration spreading from the kidney are the presence of pus in the urine, the persistence of suppuration after drainage, possible sinus formation, and evidence of calculus or of tuberculous infection of the kidney on the infected side. The so-called primary type of perinephric suppuration, whatever its ætiology may be, is a clinical entity with a far better prognosis than the other type. It has a very much lower mortality, requiring simple drainage in place of possible nephrectomy or a difficult appendicectomy, and is practically never followed by prolonged sepsis.

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[4] Ibid., 1931, cviii., 528, 532, and 543.
[5] Ann. d'Igiene, 1932, xlii., 589.
[6] Jour. Amer. Med. Assoc., 1933, c., 1096.
[7] Ibid., July 15th, p. 192.
[8] THE LANCET, 1928, i., 1133.

[1] Jour. Amer. Med. Assoc., 1924, lxxxiii., 2070.
[2] Jour. Urol., 1933, xxx., 2.

THE NEW PHARMACY

THE interesting collection of fine old drug jars on the stand of an old-established firm at the Chemists' Exhibition, at the new Horticultural Hall at Westminster, led one to reflect on the great change which has come over pharmacy in, say, the last half century. A continental visitor would have wondered where the chemist's part came in. Certainly some firms showed pure organic chemicals which are used as drugs, but apart from the purely British significance of the word "chemist" there was very little which the older type of pharmacist or druggist could recognise as belonging to his art. Although drugs and galenicals still occupy an important place in the pharmacopœia, the modern tendency is for them to be supplied like most of the newer preparations in factory packed and convenient units; hence glass-bottle makers and makers of other "elegant" containers show their wares at such exhibitions. The ancient connexion between barbers and surgeons is perhaps perpetuated by the exhibition of safety razors. Some modern tendencies in prescribing are reflected in the preparations of halibut-liver oil, which is more active than that of its cousin the cod, and in the addition of glucose preparations and toffees shown by some firms. The art of the perfumer and the beauty specialist figures largely in modern "pharmacy," and one large but discreet stand was devoted to anti-fertility rites. An ingenious device for re-setting clinical thermometers was shown by a firm of thermometer makers. It consisted of a simple pocket centrifuge based on the principle of the Archimedian drill, and should be useful for dealing with these rather troublesome instruments. The exhibition as a whole, whilst it showed how little of his art the modern pharmacist need practise, showed also the greater certainty and cleanliness that the modern methods of preparation and packing of medicinal materials have brought in their train.

EUGENIC STERILISATION IN SWITZERLAND

THE first of the United States of America to pass a sterilisation law was Indiana, in the year 1909. The first of the cantons of Switzerland to pass such a law was Vaud, in 1930. But it is not to be inferred from this that sterilisation in Switzerland has only been performed for the last three years. According to Prof. Hans Maier, director of the Burghölzli Mental Hospital, at Zurich, who, on Sept. 28th, gave an address on the subject at the Royal College of Surgeons of England, sterilising operations have been carried out in Switzerland for the last 50 years. Apparently the legal position in Switzerland and in this country differs in that Switzerland has no provisions of special acts relating to lunacy and mental deficiency which render such operations illegal for persons concerned in these acts. In most European countries, laws relating to offences against the person seem to be generally similar. According to these, operations upon the human body are regarded as within the law when they are performed with a therapeutic aim. In Switzerland the term "therapeutic" seems to be widely interpreted as applying not only to the welfare of the individual, but also to that of the community as a whole. Considerations of social and racial hygiene are, in Switzerland, held to fall within the meaning the term "therapeutic," and therefore to justi a sterilising operation. Feeble-mindedness— elastic term which is interpreted in Switzerla somewhat more broadly than according to the leg definition it has received in this country—a schizophrenia were the conditions for which Pro Maier regarded sterilisation as most appropriat Before sterilising a person for a eugenic purpose, is usual in Switzerland for a surgeon to deman two medical certificates from two competent physicia stating that the subject is a fit candidate for th operations. Sterilisation is not indiscriminately pe formed on all persons to whom a given diagnost label has been attached. Against this practic several forceful objections may be adduced, of whic the most important is that a strong prejudice ma be aroused against institutional treatment if it i thought that sterilisation is an inevitable seque to commitment. Such an attitude is especiall justified when the measure can be compulsoril applied. In Switzerland sterilisation is at presen voluntary in the sense that it cannot be applie to an unwilling subject. Furthermore, it is carrie out selectively, the merits of each case are, it i stated, carefully discussed and the pros and con of sterilisation are separately considered. It is no believed that every sufferer from a given form o mental defect or disorder is, from the mere fact tha a particular diagnosis has been made, a suitabl candidate for the operation. If the sterilisation o mental defectives is ever legalised in this country, there is little doubt that it will be performed along lines resembling those which govern the practice in Switzerland.

THE DIABETIC MOTORIST

THE recent case of a motorist, who pleaded guilty to the charge of driving while under the influence of a drug (insulin) is of great importance to the large number of diabetic patients who drive cars with perfect safety. Its medico-legal aspects were discussed in THE LANCET last week. Its clinical lessons remain to be emphasised. The defendant in the case was saved from death in diabetic coma in May, 1923, by insulin, then only recently made available in this country, and had remained in good health ever since, although his insulin requirements had increased slowly for some years, and rather rapidly for one year. During these years he had often had slight symptoms of hypoglycæmia, and treated them at once with sugar. It was stated in court that a year ago he had discussed with his medical adviser the question of hypoglycæmic attacks occurring while he was driving, and had given an assurance that he was able to recognise their onset quite easily, and stopped driving until he had felt better, after taking sugar. In the present instance, when he failed altogether to recognise the symptoms, he had three months previously, under advice, increased the dose of insulin very considerably; in the last few weeks he had begun to have signs of hypoglycæmia, and had reduced the dose by 20 units.

It is noteworthy that the majority of patients who take insulin do recognise the symptoms of hypoglycæmia and act accordingly; but a minority never do so, and are thus always a potential danger to themselves and the community. They may suffer from fits, hemiplegia, a condition similar to drunkenness, or pass, as this man did, into a state of automatism. A patient who is liable to pass into this condition is clearly unfit to have a driving licence, and should not apply for one. There remains a very small group, the members of which appreciate, as a rule, the symptoms of hypoglycæmia, but on very rare occasions do not recognise their onset. This is more likely to happen if the patient is absorbed in some distracting work or activity, such as driving a car which takes his attention from his physical sensations. To deprive this group of patients of their licences seems hard lines, although in the public interest no exception can be taken to this course.

It is possible that the advice which is often tendered to patients under insulin therapy who want to bathe might be of assistance to diabetic motorists. An attack of hypoglycæmia on dry land is not feared by most patients, but an attack while swimming in deep water might be very serious; further, the exercise itself leads to the utilisation of a good deal of sugar, and thus renders the patient more liable to hypoglycæmia. Since the morning dose of insulin is usually taken rather early, and three hours may well have elapsed after the injection before the patient is on the beach, it is a good rule to avoid bathing altogether until after lunch. In any case it is advisable for the patient to eat at least 10 g. of carbohydrate before entering the water, so as to prevent the blood-sugar becoming too low. Similarly, diabetic patients would be well advised not to drive a car in the latter part of the morning, and if they have to for an urgent reason, should always eat some extra carbohydrate before starting. They ought not to continue to drive when the usual hour for the midday meal is passed.

INTESTINAL KNOTS

Knot-formation is one of the rarer causes of intestinal obstruction. K. E. Kallio,[1] who has recently published a detailed study of the condition, has been able to collect only 84 cases from the literature, to which he has added 77 hitherto unpublished cases from the hospitals of Finland. He draws attention to the curious fact that cases reported from Finland greatly outnumber those from all other countries; in addition to his own cases, 45 of those previously published are of Finnish origin, i.e., over 75 per cent. of the total number of cases (161).

Knotting may take place either between two freely movable loops of bowel, if these become spirally twisted around one another in opposite directions, or by the twisting of a single loop upon itself in the form of a sailor's knot. The latter kind is extremely rare; Kallio has been able to find only one reported case. The former type falls into two classes: knotting of (1) small with large intestine, (2) two loops of small intestine. The type of knotting in which the large intestine takes part is much the more common. Of the two situations, sigmoid and cæcum, where knotting occurs, the cæcum is very rarely involved (2 cases). The sigmoid group, on the other hand, includes the majority of all cases of intestinal knotting (83·2 per cent. of the present series). Knotting of the transverse colon with the sigmoid is theoretically possible where both are long and mobile, but no case was found on record.

The exact mechanism of the accident is obscure. Three factors appear to facilitate its occurrence: advancing age and loss of fat; an unusually long intestine and mesentery; abnormally short parietal attachment of the sigmoid mesocolon and fixation of the terminal ileum. Kallio believes that the relatively high incidence in Finland, among the poorest of the working classes, is accounted for by their habitual diet, which is chiefly vegetable, large in bulk but small in nutritive value, combined with a length of bowel which he states, on the authority of Wallenius, to be above the average for other nations. The meteorism which such a diet is apt to produce would tend to occur particularly after the largest meal of the day—among working men the evening meal—which may explain the fact that the onset is almost invariably during the night. The fact that 90 per cent. of the patients are men is ascribed to the more generous dietary and greater average length of intestine in the male. The author suggests that the mode of development in the commonest (ileo-sigmoid) type may be that the sigmoid, filling with gas and aided by the recumbent position, rises out of the pelvis into the abdomen, where it lies in contact with coils of small bowel. A sudden movement of the body brings a loop of ileum across the sigmoid, and a further movement, or strong peristalsis, causes it to twist round the latter. The process once started is progressive, peristalsis and distension combining to draw the knot tighter and tighter.

The symptoms are those of an acute intestinal obstruction rapidly progressing to gangrene and peritonitis. The patient's general condition quickly deteriorates and is often desperate by the time that he comes under treatment. The total mortality of all the cases was 67·2 per cent. This is more than double the figure, estimated by Rowlands and Turner as 32 per cent., the average mortality-rate for all forms of acute obstruction (strangulated external hernia excepted) in seven large British hospitals. Kallio lays stress on the necessity for careful preoperative preparation. He advocates general rather than local or spinal anæsthesia. Reduction is first attempted and is facilitated by puncture of one or both of the distended loops. If it proves impossible, the whole mass must be resected. Once the knot is undone the question of viability must be decided, and "it is better to err on the side of pessimism." The exact treatment to be adopted when gangrene is present must of course be determined in accordance with the general principles of intestinal surgery.

A COMBINED RADIO SET AND HEARING AID

A WIRELESS set of considerable interest to deaf persons has recently been introduced. It is a self-contained 5-valve instrument of ordinary "transportable" size, and may be obtained from the Multitone Electric Co., Ltd., at the reasonable price of 20 guineas, to run on batteries or from the mains. It is provided with a built-in moving coil loud-speaker, and is usable as an ordinary wireless, but has a tone-control device to vary the point of greatest amplification to different parts of the scale, in order to adapt the reproduction to various forms of deafness. In addition, it is provided with a "head-phone" type of telephone receiver connected to the set by means of a long lead containing an independent volume control; by this means a deaf person is enabled to listen to broadcast music, or to a gramophone plugged in to the set, and can control the loudness at the telephone receiver, while other members of the family hear the loud-speaker at a normal volume. There is a further application of the instrument. By moving a switch the loud-speaker is converted into a powerful transmitter which enables the deaf person to hear by his telephone the conversation in the room. Although, of course, not truly portable, it is a most efficient deaf-aid when used in this way, and the volume- and tone-controls render it very adaptable to individual requirements. The important claim is made that a large number of supposedly deaf-mutes can be made to hear and appreciate sounds with this instrument, and that the broadcast programme provides an excellent means of accustoming them to speech, music, and various other sounds. If these claims can be substantiated, the apparatus will be of use to instructors of the deaf, especially in the difficult early stage of teaching the meaning and quality of sound, and should assist in the development of a natural tone of voice, for which purpose it is of great value for the patient to hear his own vocal efforts.

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[1] Acta Chirurgica Scandinavica, 1932, lxx., Supplement XXI.

THE DRUG TRAFFIC

THE work of the Permanent Central Opium Board and of the Advisory Committee on Dangerous Drugs has been under review at Geneva by the Assembly and Council of the League of Nations. It was reported that the declared figures for manufacture and stocks in hand of the drugs scheduled in the Conventions of 1912 and 1925 are gradually approaching the quantities necessary for the medical and scientific needs of the world. These it will be remembered were, according to the estimate of the secretariat of the League, nine tons of morphine, two tons of heroin, and five and a half tons of cocaine per annum. There is, however, beyond the official returns received an amount of illicit traffic which cannot be estimated. While the seizures of contraband in 1932 were, except in the case of cocaine, less than in 1931, the Central Board adds "it must not be concluded that this decrease is a result of the gradual disappearance of the illicit traffic. It may perhaps be more accurate to conclude that the centres of the traffic and the routes followed by it are changing." Thus the suppression of morphine factories in Turkey was followed by their establishment in Bulgaria. In 1932 there was a considerable increase of manufacture of morphine and heroin in Soviet Russia; Poland also has become a producing country. In the Far East a sinister development of secret factories of narcotics in China has been disclosed, while in Japan the total consumption of heroin in 1932 exceeded that of all the rest of the world put together.

AGRANULOCYTOSIS

Dr. R. C. Beck[1] has performed a useful service in reviewing present knowledge of agranulocytosis, which he prefers to call neutropenia. He defines it as a "grave disease of unknown ætiology characterised by a marked reduction in the total number of white cells and a great reduction in the percentage of granulocytes, accompanied by aplastic, normal, or hyperplastic myeloid tissue. Following the peripheral neutropenia there may be a number of lesions and symptoms which might follow the removal from the body of such an important defence mechanism. The disease may be acute or chronic." He describes five clinical types. (1) The fulminating acute type with sudden onset of fever and necrotising angina, and possibly jaundice and albuminuria. The neutropenia is extreme, and this type is rapidly fatal, extensive necrosis of the granulopoietic system being found at autopsy. (2) The subacute type characterised by low fever, slight enlargement of glands and spleen, neutropenia, late development of a sore throat, and necrosy. (3) The relapsing type. Patients in this group have several attacks weeks or months apart. The symptoms may be fulminating or subacute, and though death may ultimately take place, there may alternatively be complete recovery or the process may become subchronic. (4) The subchronic type. The onset is insidious; the leucopenia is usually less intense, and the number of granulocytes is higher than in other types. The patients may be ill for a year and yet recover; indeed, cases of six years' duration are on record. (5) The cyclic type. These cases show a chronic regularly recurring periodic neutropenia associated with some varying degree of ill-health. The evidence available suggests that weakness, exhaustion, fatigue, and a tendency to sleep are the chief results of a depressed granulocyte count in the less acute cases. Nucleotide K. 96 is the most hopeful treatment at present, though by no means invariably successful. The ætiology of primary cases is still unknown; nor has it been explained why the disease should be commoner in Germany and America than it is in this country.

ST. MARY'S HOSPITAL NEW MEDICAL SCHOOL

THE former students of St. Mary's Hospital who came to town last week-end for the post-graduate course had an opportunity of seeing the new medical school, which the vision of Dr. C. M. Wilson, the dean, combined with the executive ability of Sir Edwin Cooper, the architect, has created for their fortunate successors. The school will, it is hoped, be opened formally before Christmas. It is continuous with the new bacteriological department, and the new building faces the hospital across Cambridge-place, matching it in height and length. The Georgian treatment is skilfully planned to be sympathetic, and in no way disrespectful or patronising, to the honourable old building whose offspring it is. One of Dr. Wilson's ambitions was to prevent the reading-room from looking like a club, and it is furnished with deep armchairs and settees in dull scarlet leather, modelled on the most recent rectangular lines. In the refectory the dining tables are square, of weathered oak, and the chairs are upholstered in goatskin of the same colour as those of the reading-room. Students will go through the reading-room into a large gymnasium, and beyond into the gallery of a squash-rackets court with a wooden floor. Below, on a level with the courtyard and opening on to it through several large glass doors, is the swimming-bath, the water in which is purified by exposure to ultra-violet light. The library has not yet been equipped, but promises to be as complete as any in London. It is panelled in oak, with oak floor and pillars, and has a wide gallery. The courtyard is to be laid out in turf, and underneath it there will be a garage. The bath will be open to old students. The lecture-rooms are on the most approved modern pattern, and fitted with lantern and cinematographic apparatus. The first floor houses chemistry; the second floor, pharmacology, physics, and physiology; the third, physiology; the fourth, anatomy and biology. There are a considerable number of research rooms on all the floors.

Summer Time, which commenced in Great Britain, Ireland, the Channel Islands, and the Isle of Man on Sunday, April 9th, will cease on Sunday next, Oct. 8th, at 3 A.M., when the clock will be put back to 2 A.M. The hour 2–3 A.M. Summer Time will thus be followed by the hour 2–3 A.M. Greenwich time.

THE pictures and furniture, for the equipment of a senior common room at University College medical school, given to the College by Sir Buckston Brown, were on view on Monday last at the opening of the winter session. A private opening of the room took place some two months ago. Sir Buckston has for many years been an assiduous collector, and this new proof of his public-spirited generosity is a testimony, by its contents, of his sound and wide discrimination.

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[1] Arch. Internal Med., 1933, lii., 239.

OPENING OF THE MEDICAL SCHOOLS

THE winter session opened this week with inaugural addresses at several of the medical schools. Below we publish extracts from several of them. Sir Gowland Hopkins spoke at Guy's, Sir Farquhar Buzzard at the Royal Free, Prof. Langdon Brown at Westminster, Prof. Hall at the University of Birmingham, and Prof. Dodds at the Middlesex Hospital.

THE BURDEN OF FACTS

BY SIR GOWLAND HOPKINS, F.R.C.P., P.R.S.
PROFESSOR OF BIOCHEMISTRY IN THE UNIVERSITY OF CAMBRIDGE

The great art of medicine is based upon much more than scientific knowledge alone, but if it neglects any knowledge which can extend its powers it sins against the light. It is sure, therefore, that the search for ideals in medical science teaching is not merely of educational, but of social and national concern.

In respect of the preclinical teaching any approach to an ideal should involve, as well as an adequate introduction to the facts of the ancillary sciences, the instilment of a scientific outlook, and with it the love of exact truth together with a recognition of human frailty in striving for the truth; the ability to weigh evidence and (believe me of no small importance to the doctor) a willingness to give up prejudgments and prejudices in the face of evidence. These should be the gifts of a scientific education. It is difficult enough for them to emerge from the burden of facts which we place on the shoulders of the willing student.

Although the preclinical teaching is allotted a shorter time in this country than in some others the remedy is not to be found in its extension. This would certainly be unpopular and is likely long to remain impossible. Moreover, it would probably not result in making the present teaching of facts less hurried and therefore more easily assimilated. That enemy, the specialist, as he is to be found in the universities at any rate, abhors a vacuum or even low pressure anywhere in the time-table. He would, I think, hasten to raise the pressure again.

We are, of course, engaged now in making a present of the teaching of the preliminary sciences to the schoolmaster, and this in effect is lengthening the pre-clinical years of study. But this policy cannot be pushed farther. Cultural value can doubtless be given to the teaching of these sciences, but we must not interfere any more with the wider education so essential to a liberal profession.

The teaching of science to the medical student might, I think, be made more vocational, thus leading to much economy in the facts to be memorised. Henry Poincaré, the great French mathematician and philosopher, more than once pointed out that science itself has to select the facts which it takes under its charge. "However great our activity," he wrote, "facts outstrip us and we can never overtake them. While the scientist is discovering one fact millions and millions are produced in every cubic inch of his body. Trying to make science contain nature is like trying to make the part contain the whole."

There is a hierarchy of facts, and those which science seeks are those which occur frequently in the scheme of things, and not those which occur once in a way in isolation without apparent bearing on other facts. It is the facts which unite into generalisation that are the treasures of science. Now when any pure science is to be applied its own facts and even its generalisations assume a new hierarchy, a new relative importance; and it is clear that a selection for specific application is as logical as it is ultimately necessary. With such a selection, however, teaching becomes labelled as vocational, and this raises an issue which may be viewed differently at different centres of teaching. At the two old universities, and I think at some others, there is distaste for the very sound of the word vocational. The ideal that every science should be taught to everybody for its own sake without reference to its application is doubtless a high one and worthy of respect. It should, I think, be respected however, with due regard to possibilities and to the needs of special cases. Moreover, I have always held that if the teacher has skill enough, and goodwill, the fundamentals of a science can usually be taught adequately on a basis of facts selected for their vocational value.

Doubtless, indeed, in a great medical school where preclinical science is taught in a clinical atmosphere there is no such dislike of the vocational element. If so there may be, and probably is for the student, some lightening of the burden of facts. Or this could be so if examiners were always wise. But it is true that to teach scientific principles adequately on a vocational basis requires real aptitude and special knowledge on the part of the teacher. Here perhaps we come to the root of our difficulties, and may be a dim foreshadowing of a solution. Teaching as an art is too much neglected in our centres of higher learning, especially perhaps in the science schools of the universities. Those in authority there usually reach their position because of their distinction as investigators, or for good reasons other than their ability to teach. Some few may have the faculty inborn, others lack both ability and the interest necessary for excellence. It is wholly right, indeed, that in a progressive scientific centre the claims of research should be paramount, and it would be fatal if distinguished investigators were compelled to adjust their thoughts and teaching to professional needs.

I am thinking however—vaguely, I must admit—of a possibility other than this. We know that distinguished clinicians during recent years have foregone the financial reward of practice in order to devote themselves to advanced teaching; to clinical research also perhaps, but often, in the main, to teaching. May we not hope that men of equal ability may choose an unselfish career involving a full medical training (for that would be an essential experience) and a subsequent return to the teaching of preclinical sciences, not as specialists, but as teachers capable of covering a wide ground, and presenting the facts from a standpoint which would be selective, synthetic, interpretative, and devoted to a special end? Such teachers could not be investigators as well, and could never function, of course, without public recognition of the importance of their special work, and the respect which would be its due. Here, however, I am dealing with matters on which, in Sir Thomas Browne's words, "thought should but tenderly touch"; for it is clear that finding a place for such teachers as these would present great difficulties, especially in connexion with laboratory work. I believe that most of my colleagues would think it impossible, and moreover feel that such a policy, if practicable, would be essentially bad. Nevertheless, I am as convinced now, when near the close of my career, as I was at its start, when science made less demands, that synthetic minds should somehow intervene between the scientific specialist and the student preparing for a profession of which the basic demands cover so wide a ground.

PREPARATION FOR MEDICAL PRACTICE

BY SIR FARQUHAR BUZZARD, BT., F.R.C.P.
REGIUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF OXFORD

THE medical curriculum is, at the present time, the subject of much violent criticism, some of which it thoroughly deserves. It is said, with much truth, that the education of the medical student is broken up into a number of departments too rigidly separated by barriers of examinations, and that the student not unnaturally fails, therefore, to appreciate the value of what she has learned in one department when she passes on to the next. It is, perhaps, easy for the student to think that each department in the curriculum is playing for its own hand, as it were, and has lost sight of the goal to which her education is directed. You may ask, and the questions are not really impertinent, "Why am I kept so long from seeing anything of living human beings and their ills?" "Why cannot I be shown at a much earlier stage how all these physical, chemical, anatomical, and physiological facts and theories, which I am asked to absorb and memorise, are applicable to my future work, and are to be of use to me when I am brought face to face with the problems of health and disease?"

And when you are qualified and have had a short experience of medical practice you may ask, again with some justice, "Why was so much of my time spent in studying disorders of the mind, seeing that half my patients need skilful understanding and wise inspiration rather than medicinal or surgical treatment?"

These few questions indicate substantially the chief charges which can be laid against the present system of teaching medicine, but I am not going to suggest for a moment that the system is thoroughly bad. While I am actively interested with others in improving the curriculum by such alterations as are possible, the last thing I want to do is to discourage you at the outset of your medical careers or to damp the enthusiasm with which you are preparing to overcome such obstacles as are placed in your path. After all, no curriculum can be perfect, perfectly adjusted to all needs and all times, and any curriculum is just as good or as bad as you and your teachers care to make it. Let me ask you never to forget that there is something to be gained from all these years of work in the school and hospital far more important than success in examinations, or a licence to practise, something which is very difficult to describe within the limits of a single word. Perhaps "scientific culture" most nearly indicates what I have in mind. Somebody—I don't know who—once defined culture as "what is left over after you have forgotten all you have definitely set out to learn." An admirable definition of the kind of culture you may look forward to possess when you have passed your final qualifying examination and have forgotten most of the facts you were at so much pains to remember. Such culture is within your reach if you make the best use of your opportunities and absorb from your teachers a measure of their own spirit of scientific doubt and inquiry.

After all the real object of any educational curriculum is to cultivate in the student's mind a capacity for independent criticism based on a solid foundation of common knowledge. The common knowledge, that of accepted facts and theories, can be adequately tested by examiners and examinations, but a well-developed critical faculty is only recorded when its possessor is brought up against the difficult problems of actual practice.

You may well ask me how this very desirable state of mind can be achieved, a question which I will attempt to answer to the best of my ability.

In the first place I shall refrain from urging you to throw all your energies into your work as I have a suspicion that the conscientiousness, characteristic of your sex, may lead you to an excessive expenditure of effort without all the success it deserves. I would rather suggest ways in which your routine work may be advantageously supplemented by other interests.

Referring the other day to a memoir of Dr. Anstie, the first dean of your medical school, I found these words in the description of his student days: "He was not indisposed to stray from the clearly-defined path of a particular study—to turn up, as it were, some byway of thought in company with a sympathetic friend, and discuss points of interest the bearing of which upon his work as a medical student was not quite evident." Dr. Anstie had a short but brilliant career as a physician and it may be that this habit of his as a student was a factor in his subsequent success. And a great teacher of mine, Hughlings Jackson, used to urge upon us the value of sitting down in a comfortable chair at the end of a day's work, allowing one's thoughts to wander around something which had roused one's interest and jotting down the ideas and suggestions to which it would give rise. It *was* a valuable habit; it encouraged independent criticism, it prevented observations from being left isolated, gave them associations, and stimulated one to turn up and explore those byways of thought which are always to be found by those whose minds are fond of rambling.

Let me approach my next suggestion in this way. My colleagues here will probably agree with me when I say that the most important difference between a good and indifferent clinician lies in the amount of attention paid to the story of a patient. While the indifferent clinician is content to concentrate on what he can find out by various tests and methods of examination, the good clinician will devote time and energy in extracting all available information concerning the patient's life-history in the belief that he will only thus be able to see his present condition in right perspective. In the same way it is difficult to become scientifically cultured, if I may again use that term, without at any rate a considerable acquaintance with the history of science and the history of medicine. It is not enough to know what science or medicine teaches at the present day; without some insight into the evolution of that teaching, some familiarity with the work and lives of those who have contributed to it, there is grave danger of being unable to assess changing theories and new fashions at their true worth. Such hours as you may spend in historical research will not only show a profit, but bring you pleasure and confidence.

May I make one more suggestion? Your time is already fully enough occupied, but keep an hour or two now and then for the cultivation of at least one hobby. And by "hobby" I don't mean a form of athletic recreation, but some pursuit which engages your interest and involves a certain amount of intellectual activity. It should be completely divorced from your professional studies and, if possible, should lead you into association with men and women whose vocations and outlooks are different from your own. Anything from stamp-collecting to archæology will answer the purpose, which is to preserve your mental elasticity and to provide you with a handy and welcome respite from the strain of your life's work.

THE RETURN TO ÆSCULAPIUS

By W. Langdon Brown, F.R.C.P.

REGIUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF CAMBRIDGE

A STRIKING feature of twentieth century medicine has been a return to the cult of Æsculapius: cleanliness, fresh air, suggestion, dream analysis, and psychological explanation. These were the cardinal tenets of the cult, and it is a striking fact that all of them were lost by medicine until quite recent times. The bathroom was an almost unknown adjunct to a private house until about 1850; fresh air was anathema for the sick until about the beginning of the present century; psychotherapy, until the war, was looked upon as a crank and studiously avoided by the majority of the medical profession as savouring of quackery. To-day we have returned to the cult of Æsculapius and are his faithful disciples.

There was much in the temple ritual which may now seem like quackery, but I would prefer to call it psychotherapy adapted to the need of those times. To-day there is still a craving for magical cures; the common phrase "it worked like magic" expresses that deep if subconscious desire. After all, our reason is a much more recent acquisition than our emotions, and when health is shaken it is the most recently acquired, the highest levels of the central nervous system that most easily lose control, and the primitive man peeps out of the cave in which reason has shamefacedly tried to conceal him.

For me the significance of this modern return to Æsculapius is the recognition of the importance not only of the disease which the patient has, but of the patient which has the disease—his reactions as an individual, his environment, and his hereditary trends. The old adage "examine the whole of your patient" thus assumes a new meaning. It is by this combined attack on the physical and psychological side that medicine in the future will make advance and still further aid human suffering.

Looking back to my student days, it seems to me that even that interval of time has seen many organic diseases robbed of their worst manifestations. Yet we are only just beginning to tackle seriously those maladies of the mind which lead to so much suffering and which if they do not destroy the body may yet destroy the soul. I am not thinking merely of insanity, but of psychoneuroses, phobias, obsessions, and compulsions which can turn life into a hell both for the patient and his family. Valuable research is going on into the way in which both the rational and instinctive levels of the mind work, but for years to come our practical handling of these problems must remain largely empirical.

Even in physics the upholders of the quantum theory maintain that we cannot observe an object without altering it. Whether that be so or not, I am certain that we cannot even observe a patient without altering him for good or evil. We shall inevitably produce reactions by everything we do, say, or leave unsaid. How potent these reactions may be, physiology can teach us.

I will yield to no one in my admiration for the fruits that biochemistry has laid at the disposal of the physician. But this makes me all the more anxious not to see biochemical methods misused. Too frequently the patient is handed a long list of analyses, which neither he, his doctor, nor the analyst himself can really interpret. They convey an impression of scientific accuracy which is entirely illusory. Consider how profoundly the psychical state can modify the secretion of the digestive juices, how it may disturb the functions of the kidneys and bowels. Is it conceivable that it has no influence on these minute biochemical properties? The discovery of argon was described as the triumph of the third place of decimals, but that stage is not yet reached in clinical medicine, and it is sounder to recognise that fact. What is the use of noting that a particular drug raised blood pressure by 2 mm. when a political argument will easily raise it 20 mm. or more? I am, of course, not decrying exact analysis in research work, that would be absurd. But research implies correlation of a large number of results with appropriate controls, not the handing of an alarming set of figures to a nervous patient. The continental spas began it and we are tending to follow suit. I consider that it is chiefly done to impress the patient, and that it is not legitimate, since the impression is liable to be a harmful one.

It is not the function of the doctor to suggest ill-health. That I lay down as an axiom. If you follow it you will probably lose many patients who find it more interesting to be told they are ill, but you will do more good in the world. You may take it that every patient who consults you, whether he brazens it out or not, is in a state of fear. He is thereby rendered more suggestible, and your attitude, whether encouraging or the reverse, can profoundly affect his autonomic nervous system through his emotions, and thereby practically every chemical reaction throughout his body may be modified. Our attitude influences not only his own chemical mechanisms but will actually modify the effect of the drugs we give. Herein is the scientific explanation of the fact that the best of tonics is hope.

But an essential factor in hope is faith. The patient must be able to believe in you, in your knowledge, care, and skill. You will have to give good grounds for this faith, and in order to inspire it no aspect of the case must be neglected. Too often the success of unorthodox lines of treatment is contributed to by neglect on the part of the orthodox professions of some such aspect. Bone-setting and osteopathy owed their rise to our former neglect of manipulative surgery, homœopathy to over-drugging in the past and neglect of expectant treatment, which means standing by to help nature wherever we can, and Christian Science to the materialistic attitude of pre-war medicine. In my opinion, however, the invaders are responsible for errors of commission which far exceed our errors of omission. They crystallise treatment around some postulate, such as small vertebral displacements, pain as a "false claim" or like curing like. And we cannot accept these postulates. But one feature all these unorthodox methods have in common, they utilise suggestion.

Now, organic disease is not so common as we often suppose. The wards of a hospital give the student an erroneous impression on this point, since the cases are specially selected. I have asked various general practitioners what proportion of the patients they see are suffering from functional rather than organic disease; not one of them placed it at less than 40 per cent., while some put it as high as 75 per cent. That is to say, about half to three-quarters of these patients were, broadly speaking, finding difficulty in adapting themselves to their environment. Clearly the trouble might be due to the environment, but also it might be due to themselves. In the sphere of organic disease a valvular defect in the heart may be compensated for by cardiac hypertrophy or it may fail to compensate, with resulting cardiac dilatation. In the same way an organ inferiority may determine a man's attitude to life. An error of refraction, which Turner was able to compensate for so successfully as to become a great colourist, may lead a psychoneurotic to simulate blindness. A disturbing emotion will cause palpitations and a sinking sensation in the stomach. The normal individual recognises this for what it is worth, the psychoneurotic concludes he has heart disease or a gastric ulcer. This enables him to fulfil his unconscious or subconscious desire to retreat from life and evade his duty as a member of the social organism.

I am not blaming him; his external environment may, indeed, be difficult to-day. It is not surprising that many people find it hard to adjust themselves to conditions which are changing so rapidly. Moreover, the old sense of security has gone. Indeed, it is not only material prosperity which is in danger, it is liberty of thought which is becoming endangered by a relapse to medieval mentality. I particularly appreciated H. G. Wells's recent comment on certain events. He said that to him "it seemed more than anything else a rebellion of the clumsy lout against civilisation." The remedy for such ills of the State and those of the individual is the same—increased self-knowledge.

The foundations of the psychoneuroses are already fairly clearly known; the plans on which they are formed are consistent and comparatively few, but the elaborations and resistances which are built up on these plans and foundations are often baffling. Yet with sympathy and encouragement they may often be elucidated and the sufferer greatly helped. Although it is true that difficult and complicated cases of this sort call for specialist treatment, it is equally true that the ordinary doctor who goes about with his eyes open for the psychological aspect of disease will soon find that he can greatly increase his usefulness. He will find the simpler methods of Adler not difficult to acquire and not so time-consuming in practice as some others.—An American psychologist once said to Adler: "You haven't been talking psychology at all, but only common sense." To which Adler replied: "Well, why don't you also talk common sense?"

Sir James Mackenzie neatly defined symptoms as the disturbance of normal reflexes. A normal reflex is certainly purposive, and should be painless. Through a chain of conditioned reflexes we associate ideas and achieve consciousness. This consciousness appreciates that a disturbance of the normal reflex is painful and being still purposive proceeds to investigate the cause of the pain. The dog licks his bite, the burnt child dreads the fire, but from such simple defensive reflexes as these are built up elaborate associations of ideas, until in the process of social evolution certain individuals become set apart to be epicritic on other people's protopathic sensations and to try to rectify these disturbed and, therefore, painful reflexes. There is thus no break in the chain between simple reflexes and the evolution of the medical profession. Behold us here assembled as the last link in a long chain of conditioned reflexes!

THE WALL BETWEEN THE CLINIC AND THE LABORATORY

By Arthur J. Hall, F.R.C.P.
EMERITUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF SHEFFIELD

One great objection to the examination system is that the student tends to "prepare for examinations" rather than for his life's work. Subjects which are not on the schedule, and on which questions are not likely to be asked, are apt to be neglected. As the special subjects increase in number and complexity, it becomes impossible to include all of them as compulsory subjects. Another objection is that examinations have helped to form a wall between the earlier laboratory and the later clinical studies.

About a century ago, when schools of anatomy were being founded all over the country, no such division existed. All the subjects of the student's curriculum grouped themselves naturally around the practice of medicine; all the teaching was given by men actively engaged in practice. The only subject of study at that time which could be called a laboratory subject was human anatomy, and this was taught entirely in relation to medical practice.

There was another factor in those days which helped in the coördination of studies. Every student entered upon his career by becoming an apprentice to a medical practitioner. Thus from his earliest student days he came in direct contact with sick persons. However few or elementary the studies of the apprentice may have been, they did centre around medical practice. They were all being taken at the same time, and when completed, there was one single examination in all of them. The apprentice's first examination was also his final! Happy days indeed!

As the laboratory subjects applicable to medicine increased in number and difficulty, they began to take up so much of the student's time that there was little or none left for his duties as an apprentice. And so more than 50 years ago the apprenticeship system was ended. Thenceforth the student of medicine must spend the whole of his time at a recognised medical school.

The range of subjects required had now grown so large that they could not all be studied satisfactorily at one time, nor could they all be taken at one examination. It was therefore necessary to separate the various subjects into such groups as could best be studied together. Those subjects which deal with general scientific principles or with normal structure and function were naturally grouped together to be taken first. At that time these were the only subjects in the medical curriculum in which laboratory work was required from the student; such a thing as a laboratory in connexion with pathology or any other clinical study did not then exist. In using the expression "laboratory subjects" therefore I refer only to chemistry, physics, biology, anatomy, and physiology. In laying down regulations for the new medical curriculum, our forefathers decided that the student must "get the laboratory subjects out of the way" before beginning the study of medicine proper.

This "getting them out of the way" was made still more thorough by the regulation that clinical hospital work cannot be begun until they are all completed and the examination in anatomy and physiology has been passed. Actually the "getting out of the way of the earlier subjects" has been so effective that the difficulty now is to reverse the process. A wall of considerable height has arisen between the clinic on the one hand and the laboratory on the other. They work in separate buildings which may be some distance apart; indeed, they may not be in the same county; the teachers in the one group of subjects may have little or no experience of the other group: their respective outlooks may be quite divergent. The medical student of to-day may spend the first two or three years of his student days without ever seeing a sick person or having any opportunity of realising the bearing of his present studies on what will be the work of his life.

I do not want you to think that I am in favour of a return to apprenticeships. A century ago it may have been the best arrangement then possible; 50 years later it had already become a hindrance to progress. Nor do I wish to suggest that the teaching of science subjects should revert to the clinician. That would be equally retrograde. Medicine owes an immense debt to those who have devoted their lives to science, and that debt is ever increasing. One cannot, however, be blind to the one redeeming feature of the old régime; it did impress on the student from the very first that it is the practice of medicine to which all his studies are to be applied.

To-day the medical curriculum has become separated as it were into a series of courts each walled off from the other. The gates between them are locked. No student is allowed to go through until he can satisfy the gatekeepers that he is fitted to do so. When he goes through the gate from the laboratory court to the clinical he finds that it is laid out differently to the one in which he has just spent two or three years. There are new manners and new methods. To his surprise some of the things deemed important in the one are considered unimportant in the other, and vice versa. It is all rather confusing and should be remedied.

It can be remedied. More easily perhaps in some places than others, but with a little effort everywhere. The wall must come down! Even if it is replaced by railings they will at least enable people in each of the courts to see what is going on in the other, and occasionally talk to one another through the grille. To a certain limited extent this has been done here and there. About ten years ago Prof. J. B. Leathes, at that time dean of the medical faculty, urged us to make an attempt of this kind in Sheffield. It is not necessary to weary you with full details of his scheme. Like all other changes it required a good deal of time and patience before it was completed. In principle it is simple. The student, instead of being discouraged from learning anything clinical until he has passed all his examinations in the earlier subjects, as he has been under the old system, is obliged under the "Leathes scheme" to begin attendance at hospital as soon as he has completed his first winter session of anatomy and physiology. At this point he must pass an examination in elementary physiology, the limits of which are defined. During the next years, whilst continuing his anatomy and physiology as before and preparing for the examination in them, he spends about one-sixth of his time at elementary clinical classes at the hospitals. These are given by members of the hospital staffs, and the material chosen for demonstration is such as will permit of more direct correlation with his laboratory studies. As the student becomes more fully occupied with his clinical studies during the following year, the course of physiology is so arranged that the teaching can be in great part directly applied to his hospital work, so that physiology merges imperceptibly into medicine.

At first the clinical meat was rather too much for the laboratory bread. With time and experience, however, these have now been adjusted, and both laboratory teachers and clinicians concerned have not the least doubt that this form of mental diet has proved of great value. It has widened the interest of the student in his laboratory work, and when he reaches the stage of full clinical work he brings with him more of the laboratory atmosphere. Incidentally also it has brought the two sets of teachers into more direct contact with each other.

It is said that at some schools there are difficulties in such a "sandwich" system which are insurmountable. One of these is the distance between the two institutions in which the two sets of studies are carried on. That was actually one of our difficulties. In Sheffield, as here in Birmingham, the clinical hospitals are some distance away from the medical school. With modern facilities of transport, however, the time taken up in going to and fro is almost negligible, especially now that a motor-cycle with carrier seat seems almost as indispensable a part of the student's equipment as was a microscope in days gone by. In those places, and there are many, in which the hospital is close alongside the school no such difficulty arises. In such it seems almost unthinkable that a future medical man should study there for two or even three of his five years without ever being taken for instruction into the casualty room, the wards, or even the dead-house.

It may be that equally good or even better schemes are in use elsewhere, or will be evolved eventually, which will bring the early and the later studies even more closely together. Meanwhile Leathes' scheme is an attempt to pull down the wall, and noteworthy in that it came from the laboratory side.

DIET, EXERCISE, AND WEIGHT

By E. C. Dodds, F.R.C.P.
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Without considering the complicated biochemical processes at work which enable the body to utilise its food, we can obtain an insight into the end-results of consuming a certain food in just the same way that an accountant examines the state of a business; he does not need to know anything about the technical side but by examining the balance sheets he is able to tell whether the company is going to go downhill, remain stationary, or improve. By a precisely similar method it is possible to prophesy whether the weight of the body will decrease, remain constant, or increase, and to reduce the weight of the body at will.

It was Lavoisier who first pointed out that the supply of energy required by the body for the performance of its functions was derived solely from a process of burning up of the food substances. In order to effect this combustion oxygen is breathed in from the air, and the products of combustion, carbon dioxide and water, are passed out during expiration through the lungs. The energy provided by this slow combustion is utilised in muscular contraction and maintenance of the normal body temperature. It is thus possible to measure the amount of food used up by the body by measuring the oxygen taken; the energy output of the body can be expressed in the amount of oxygen a person breathes. A starving person is still capable of considerable activity, which may be muscular, mental, or even in some cases political, but he will lose weight because, in the absence of food, he is burning up his own body with the oxygen he breathes (in other words he begins to eat himself).

It is obvious that the more work a person does the more oxygen will have to be taken in, and, therefore, the more food will have to be eaten if the weight is to remain constant. There are two extremes in energy requirements, one the greatest possible physical activity, and the other the minimum activity. The minimum activity of the body can be arrived at by observing a person who has rested and has taken no food for twelve hours and is lying quietly in bed. The only work performed by the body is the contraction of the heart and the movements of the chest and other organs; the oxygen consumption in these conditions is referred to as the basal metabolic rate, which must be allowed for in any consideration of the energy requirements of the body. Corresponding to this rate one must obviously have a basal diet which will provide sufficient energy as food to allow for combustion without destruction of the body substances. This forms the basis of all dietetic calculations.

A small thin man will require much less energy than a large heavy one. A person 5 ft. 8 in. in height, weighing normally 10 st. 6 lb., should have a basal requirement for 24 hours of 1500 calories; that is to say, such a person in bed with no physical exertion and provided with food to the extent of 1500 calories would maintain a constant weight. The minute, however, that he sat up in bed he would lose weight on such a diet, and if he got out of bed and walked about, then still more calories would be required to maintain a constant weight. Thus by studying the oxygen consumption under varying conditions it is possible to find out exactly how much food is required for living an ordinary life.

The type of life led determines the number of calories required; the appetite is no guide. For a quiet retired life with long nights and long periods of sitting at ease, some 2000 to 2300 calories will be needed, whilst for an ordinary sedentary life such as that of a clerk or university professor, about 2500 will be sufficient. The hardest occupations have been found by this oxygen consumption test to be that of a Canadian lumberman or, in this country, of a labourer in a brick yard. These workers expend a total of some 8000 calories in 24 hours, and have to eat four times as much as the sedentary worker in order to keep their weight from falling. Contrary to the general belief, the hardest mental work makes no difference to the oxygen consumption, and brain work makes no difference to the energy requirements of the body. This problem has received most careful attention.

The experiments were as follows: a clever worker was placed in an apparatus which enabled the oxygen consumption to be recorded. A series of observations were made: firstly, with the person sitting down and allowing his mind to wander, or in other words thinking of nothing; secondly, with him sitting in precisely the same position and attitude reading a magazine or novel; thirdly, under exactly the same conditions performing a series of elaborate calculations requiring most minute attention and great mathematical knowledge. The oxygen consumption remained unaffected, and therefore it can be confidently stated that no indulgence in food or drink can be allowed biochemically as a reward for severe mental activity.

It would appear at first sight that the problem is a very simple one, and that the consumption of extra food could be balanced by taking more and more exercise in order to keep a constant weight; but we all know people who eat much and yet remain thin, and others who, in their own words "eat nothing at all," and yet continue to increase in weight. There must be some internal regulating mechanism in the body which governs the weight automatically. It is very easy to reduce weight, but much more difficult to increase the weight of a thin person, particularly if it has remained constant for years.

Considering the actual food, assuming that we have some 2500 calories at our disposal for 24 hours, we must consider the type of food very carefully, since there are other problems involved besides mere energy production. For a man of sedentary occupation about 100 g. of protein are necessary during the 24 hours. Each gramme of protein will provide four calories, and therefore some 400 calories must be allotted to protein. The rest can be divided between carbohydrate and fat, more or less how we like, remembering that 1 g. of carbohydrate provides four calories and 1 g. of fat nine calories. Tables of food values are easily obtainable, but misplaced faith in the nourishing qualities of various foodstuffs is still prevalent. For example, the anxious mother in making beef-tea gives a watery fluid to the invalid, and the solid matter—which contains 99 per cent. of the nourishment—to the dog. To the lay mind, again, there is perhaps no more potent restorative than oysters. Now a dozen oysters will yield 88 calories of energy—i.e., the well-to-do person is spending say 7s. to purchase 88 calories worth of food. The slice of brown bread and butter which he eats with the oysters will give him well over 100 calories. The most nourishing of all foods is butter, which contains some 3600 calories to the pound. It is an almost universal fact that the really nourishing foods are cheap, whilst the low caloried foods are expensive. The example of the oyster can be repeated many times; a lobster, for instance, when eaten alone will yield only some 90 calories.

It would be possible to quote innumerable examples of widespread beliefs which are quite unfounded. Bread is often refused because it is fattening, in favour of toast. Weight for weight, however, toast is more nourishing than bread, since it has lost its water and therefore contains more protein, fat, and carbohydrate to the gramme. The conviction that a particular soup must be really good and nourishing because it sets to a jelly when cold has little basis, since gelatin is one of the few proteins which will not support life. It is a pity to see anyone at a dinner refusing, let us say, oysters and clear soup, which is of very low calorie value and could be taken with impunity, while taking in literally hundreds of calories by eating rolls and butter. No wonder these people complain bitterly that they are very careful with their diet and yet maintain or increase their weight. From these examples it can be seen that any form of dieting adopted without reference to an accurate set of food tables will almost certainly bring unnecessary privation, associated with disappointing results. If a person of the dimensions referred to above as requiring the 2800 calorie diet starved himself completely, it would be possible to work out how much he would lose. Let us assume that he would lose nothing but fat, that is, 2800 calories worth of this substance a day, which in terms of butter would be little under a pound. Since human fat contains a considerable percentage of water, the amount lost would be well under the pound. By this means we can see that with complete starvation, attended by the performance of ordinary duties, not more than 5 lb. would be lost in a week. Let us assume that the person did not starve completely but took 1000 calories per day, which would mean a very strict diet; then it would only be possible for him to lose 3 lb. or so a week. The question of weight reduction is a purely scientific and mathematical one, in which superstition, blind faith, and various articles of food referred to as "slimming" have no legitimate place. To modify an axiom of the working man, one may say that no food is slimming but that some are more fattening than others. A diet may be evolved of low caloried food which will produce a loss in weight, but the principles outlined must be strictly adhered to.

It is much easier to take in calories in the form of food than to get rid of them by exercise. As a means of dissipating energy, turkish baths, warm and tepid baths, and the like have no effect, whilst massage only reduces the weight of the masseur. Cold baths, on the other hand, greatly increase the metabolism, and therefore balance articles of food. A cold bath of five minutes' duration at 16° C. causes the loss of about 70 calories. I have already pointed out that exercise increases the requirements above the basal rate, and therefore food is utilised which, if it is not provided, will be derived from the actual body substance. Most people have an erroneous view about the weight-reducing character of exercise, and it cannot be recommended for this purpose unless combined with very rigid dieting. A few examples will illustrate this.

The maximum energy output for short periods ascertained by exercising trained athletes on specially constructed apparatus and estimating at the same time their oxygen consumption is in the region of 600 calories per hour. Of ordinary games, perhaps squash racquets requires the greatest output of energy. A person playing for roughly half an hour will have utilised some 300 calories, equivalent in terms of food to, say, two slices of bread and butter or, alternatively, to two dry Martini cocktails.

We can illustrate this in another manner: let us assume that a person on a diet wishes to drink beer, but is determined to work off all the additional energy by exercise so as not to put on weight. For every pint of beer he drinks he will have to play squash racquets for half an hour or to exert himself for a longer period at a lower rate of energy expenditure, such as walking fives miles at four miles an hour. Anything like a convivial evening would imply many days spent in playing squash racquets. A glass of champagne is equivalent to about ten minutes squash, whilst a double whisky and soda would require the full half hour. A large whisky corresponds in food value to three boiled eggs, yet very few who had dined out would take six boiled eggs as a night-cap. Those who assemble at public dinners have usually already consumed their essential 2800 calories at breakfast, luncheon, and tea, and therefore the dinner is not necessary from an energy standpoint. I have estimated that the total number of calories to be offered to each host or guest at the Middlesex Hospital annual old students' dinner is 2500. Let us assume that there will be perhaps a few who will drink beverages other than water, and if we put this down at a very modest consumption we can add another 725 calories. In order to overcome the effects of this it will be necessary to play squash for five and a half hours or, alternatively, to climb a mountain of the height of Ben Nevis five times, to walk 60 miles, or to run 30 miles. As another alternative 50 hours submersion in a cold bath would be effective.

For those who feel anxious I may point out that diners may be divided into two classes: those more fortunate ones who are able to deal with this sudden glut of food and drink without exercise, and those less fortunate who definitely will put on a certain amount of weight. Even for this class there is a definite mechanism for dealing with the excess, only it does not work so well as in the naturally thin person.

In conclusion it may be emphasised that any form of obesity can be reduced by suitable application of the principles outlined, and if a person states that he increases in weight although he eats practically nothing, he is deluding himself or his advisers. It is just as impossible for a person not to lose weight when fed on a deficient diet as it is for a car to run without petrol. The average man would not consider for a moment the statement that a car would run without petrol, yet he believes without question the obese person who tells him he eats practically nothing at all and yet puts on weight. If this were so, then the laws of thermo-dynamics would be wrong.

I may add none of the statements made in this very brief account of dietetics are revolutionary or original. Every statement that I have made has been known to physiologists and biochemists for the last 20 years, which indicates the vast store of knowledge that has already been accumulated in the physiological and biochemical laboratories, and up to the present has been made very little use of by the outside world. The continuation of the war was only made possible by the absolute powers of dictation with regard to dietetics given to the German physiologist, Rubner. In the early days of the war he was entrusted with forming a committee of physiologists, who worked out the most economical way of providing the necessary number of calories for the German people. By the application of the principles described they were able to make the very most of their strictly limited food-supplies, with the result that despite the blockade the German people were maintained in a tolerable state of health until near the end of the war. If they had made mistakes of the beef-tea variety, starvation would have resulted before 1916.

If these principles are so important during war, they must be equally important during peace, and one can only conclude with an appeal to all to apply scientific principles to the processes of life, and particularly to call upon the vast store of knowledge with regard to food and dietetics.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 23RD, 1933

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 4 (last week 5); scarlet fever, 3117; diphtheria, 1169; enteric fever, 101; acute pneumonia (primary or influenzal), 586; puerperal fever, 54; puerperal pyrexia, 117; cerebro-spinal fever, 22; acute poliomyelitis, 32; acute polio-encephalitis, 5; encephalitis lethargica, 11; relapsing fever (Bridgnorth R.D., Salop), 1; continued fever (Paddington), 1; dysentery, 33; ophthalmia neonatorum, 98. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 26th–27th was as follows: Small-pox, 11 (last week 10); scarlet fever, 2090; diphtheria, 1590; enteric fever, 19; measles, 373; whooping-cough, 241; puerperal fever, 28 (plus 14 babies); encephalitis lethargica, 254; poliomyelitis, 5; "other diseases," 153. At St. Margaret's Hospital there were 19 babies (plus 12 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 6 (1) from measles, 2 (0) from scarlet fever, 19 (4) from whooping-cough, 30 (3) from diphtheria, 115 (26) from diarrhœa and enteritis under two years, and 20 (2) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa outside London 15 were reported from Liverpool, 8 each from Leeds and Birmingham, 5 each from Hull and Sunderland, 4 from Newcastle-on-Tyne, 3 each from West Ham and South Shields. Leeds and Liverpool each reported 3 fatal cases of diphtheria; Huddersfield, Hull, Manchester, and Plymouth each 2.

The number of stillbirths notified during the week was 241 (corresponding to a rate of 40 per 1000 total births), including 33 in London.

MANOR HOUSE HOSPITAL.—This hospital at Golders Green is about to be enlarged by the addition of a new wing at a cost of £25,000, which is to be named after the late Mr. Bernhard Baron, who bequeathed £10,000 to the institution. The wing will include a theatre, an X ray department, and additional domestic accommodation.

POST-GRADUATE LECTURES

SEVERAL of the London teaching hospitals have been holding short post-graduate courses during the past fortnight. As in previous years, we propose to publish abstracts of some of the lectures delivered. Of the three which are summarised below, Dr. Miller's was given at St. Mary's, Mr. Lake's at Charing Cross, and Dr. Abrahams' at Westminster Hospital.

PANDEMIC ACIDOSIS IN CHILDREN

(DR. REGINALD MILLER)

THIS subject has been suggested to me by a note received last autumn from the head of a preparatory boarding school, which ran : "All my children have returned to school this term suffering from acidosis : what is this new disease ? " This label is now being attached to so many children, that it is, I hope, excusable for the purpose of this lecture to speak of the "pandemic type " of acidosis. As I understand it, its discovery derives from the study of cases of cyclical vomiting between the attacks, so that it describes the persistent condition predisposing to cyclical vomiting. I shall therefore deal first with the acute attacks, secondly with the "pandemic " type, and then try to reach some conclusions in the matter.

Acute attacks.—At one time cyclical vomiting was held to be the expression of a ketosis of obscure origin, but there have always been difficulties in the way of accepting this explanation. The attacks are not very similar to known conditions of ketosis, as in diabetes ; the occurrence of ketosis and of vomiting can seldom be shown to follow each other in the relationship of cause and effect ; ketosis is common in children who show no symptoms, and can be induced even in cyclical vomiting children without any harm resulting ; and the term cyclical vomiting is now applied to cases which show no vomiting at all, but attacks of diarrhœa or pyrexia. On these grounds it seems clear that the ketosis of an attack of cyclical vomiting is the result and not the cause of the symptoms. The cause of the attacks appears to be, in the so-called cryptogenetic cases, an intense poisoning of the liver and this sets up the vomiting. There is proof of the disturbed liver function in many of the symptoms of the attack, notably in the frequent occurrence of pale stools ; and the extreme fatty changes in the liver found post mortem, comparable to those found in post-anæsthetic vomiting, point strongly in the same direction.

"*Pandemic type.*"—A. A. Osman holds that cyclical vomiting occurs in at least 30 per cent. of hospital children, in whom it had been thought to be much less common than in children of the well-to-do classes. He states that he was giving these children extract of malt as a placebo and noted the good effects of it on the general health and the reduction in the frequency of acute attacks. On investigating their biochemistry with H. G. Close he was unable to find any evidence of ketosis, but he claimed to find a slight lowering of the plasma bicarbonate, an acidosis not due to ketosis. The association between this form of acidosis and cyclical vomiting is not clear.

As regards the cause of the vomiting and other upsets that constitute cyclical vomiting nowadays, there seems no doubt that the original factor is, in the so-called cryptogenetic cases, a toxic knockout of the liver. This toxæmia comes from the intestine and is in milder degree the cause of the fatigue and ill-health in between attacks. Although I agree that ketosis is not notably present in the interim stages, in my experience indicanuria and the other signs of intestinal toxæmia are prominent throughout. In addition I think that there is a diminished glycogen reserve in the liver without hypoglycæmia (Cameron's "glycopenia "), and the administration of glucose by improving this lessens the vulnerability of the liver to poisons. In many instances glucose does little good, and direct treatment of the intestine is required. The withdrawal of normal amounts of fat from the diet is unnecessary and may be harmful.

THE VALUE OF PRE-OPERATIVE INVESTIGATION

(MR. NORMAN LAKE)

AN outstanding feature of surgical practice to-day is the attention paid to pre-operative investigations, and this devoted not entirely to the attainment of greater precision in diagnosis but also to estimations of the patient's ability to "stand " the operation, and in certain instances to test the prognosis of an operation if performed. There are many who maintain that the older methods are capable of giving results just as accurate and useful. I myself believe that there are fewer gross mistakes in diagnosis nowadays and certainly fewer cases submitted to unjustifiable or futile operations. It is true that this improvement may be due to other factors than pre-operative investigation but I am inclined to think that, taken as a whole, such investigations are of extreme value, though individual tests are by no means of equal certainty ; for some an approximation to 100 per cent. accuracy can be claimed but others fall far short of this, and may even have a negative value when they prove sufficiently misleading to upset an accurate clinical diagnosis.

There is, perhaps, no branch of surgery in which pre-operative investigation has been more intensively applied and reached a greater state of precision than in genito-urinary work. The ability to test the functional capacity of the kidneys by estimations of blood and urine have reduced the mortality of prostatectomy and other operations in a way that no mere technical innovation could have done. The use of the cystoscope and the introduction of ascending and descending pyelography have placed the diagnosis of urinary lesions upon a basis of precision which is unknown in many other branches. The more recent introduction of lipiodol injection of the vas may do the same for many obscure lesions of the genital system.

In the gynæcological sphere tests for patency of the tubes have greatly enhanced our ability to deal with sterility in the female. The injection of radiographically opaque materials into the lung, while not usually a pre-operative investigation, is occasionally of great value in localisation of surgical lesions. The same may be said of the intrathecal injection of lipiodol, for, despite the fact that many neurologists consider this redundant in view of the accuracy of clinical diagnosis, I have more than once known it correct an error of clinical localisation of considerable extent. Ventriculography too may sometimes prove of value to the surgeon, especially in the localisation of the obstruction in hydroephalus. It is impossible in a short review to discuss ch method in turn, but a few of the commoner and re important methods may be considered in il.

technique of investigation of the *alimentary* by barium meal and enema is now firmly established, though there is still room for improvement in the interpretation of results. In gastric ulceration the method is fairly accurate but even here much depends upon the phase of the ulceration; luckily it is usually in the active phase that the investigation is carried out. Nor must the method be expected to reveal all ulcers, even the newer technique of "whitewashing" the stomach may fail to reveal smaller and more recent lesions. In duodenal ulcer the results are far less satisfactory. Here the crater is only occasionally displayed and the diagnosis has to be made by deduction from secondary signs. Deformities of the duodenal cap can be produced by other intra- and sometimes extra-abdominal causes, while a structure so intimately under the control of the autonomic system cannot but reveal passing changes in the radiogram which may be very misleading. Pre-ulcerative conditions and duodenitis give a picture very similar to that of true ulceration and so the test frequently fails to give the surgeon the information he most requires to decide whether medical or operative treatment is indicated. In lesions of the appendix I hold this method of investigation to be of little practical value, despite many statements to the contrary, which are based on a vicious circle of arguments. Many appendices show slight variations from the normal which with the backing of an X ray diagnosis may be interpreted as pathological; when such cases are later used as evidence of the accuracy of X ray diagnosis the circle is completed. Even tenderness over a radiographically displayed appendix is no sure indication that it is pathological, as the operating table constantly reveals.

The barium enema has proved its worth, but is likewise not infallible. In the early stages of colonic carcinoma it may prove very misleading, while in the later stages for the most part it merely confirms, or sometimes usefully locates, the lesion. In diverticulosis, on the other hand, its value is paramount, for it is impossible to make a certain diagnosis of this relatively common condition without its aid. Colonic spasm, with or without colitis, may be displayed if the phase of the disease is an appropriate one, but in the intervals mistakes are frequent. Hirschsprung's disease, usually obvious clinically, is easily confirmed and the extent and localisation of the lesion are determined in a way otherwise impossible. Other methods of investigation commonly applied to the alimentary canal are the fractional test-meal and the test for occult blood in the fæces. The former I have found to be of but small diagnostic value in cases of ulcer except as supporting evidence; in the distinction between ulcer and carcinoma it may prove of supreme value if the many pitfalls receive due consideration. I continue to have the test carried out as a routine guide to the type of operation best suited to the case. On the whole I believe that in the presence of a high acid curve a partial gastrectomy is indicated rather than a gastro-enterostomy, since only in this way can any profound alteration in the acid level be obtained. The effect of the injection of histamine and other excitors of the parasympathetic system upon the test-meal curve may also prove a pre-operative guide when we are better acquainted with the effects of ablation of the autonomic nerves upon the secretions and motility of the stomach; but that is for the future. The test for occult blood if properly controlled is a very accurate one, so sensitive indeed that considerable care is needed in its interpretation. It is obviously however an indication of the presence of disease rather than of its nature and in this respect may oft-times be tantalising and misleading.

The practical results of *cholecystography,* in my experience, have not given much help. Perhaps the test is too accurate for our purpose, the surgeon being more concerned to know if the patient's pain is due to some gross pathological condition in the gall-bladder than if the functional capacity of the organ to concentrate dye is below par. It must not be overlooked that in carrying out this test four separate factors are involved: (1) the ability of the intestine to absorb the dye, a function that may be seriously upset in many abdominal lesions with which gall-bladder disease may be mistaken; (2) the ability of the liver to secrete the dye, a point of some historic interest since it was for this purpose that the halogen compounds of phenolphthalein were first used; (3) the ability of the dye to reach the gall-bladder; and (4) the ability of the walls of this structure to concentrate it. The test is concerned primarily with the last two factors and failure to take the others into consideration may well account for many of the apparent inaccuracies. The first factor can be judged to some extent by observation of the amount of dye showing in the colon, or may be circumvented by the more irksome method of intravenous injection, but in addition to the fallacies inherent in the method there are those of observation and interpretation. Despite these difficulties however the test is frequently of value and where a filling defect due to a calculus is present it is really diagnostic. But it must be remembered that an excellent radiographic shadow may be associated with a grossly diseased gall-bladder, and conversely, so that evidently the correlation between surgical disease and ability to concentrate dye is not an exact one.

I have found the *diastase test* for pancreatic disease to be extremely valuable in the diagnosis of acute lesions of that organ. I would not diagnose acute pancreatitis if the index were not considerably raised, nor would I hesitate to make the diagnosis if it were. In eight cases where clinical differentiation proved impossible the test showed accurately that three were positive and five negative.

The prognostic tests which are frequently performed when operation upon the *sympathetic system* is proposed are mainly: (1) the fever test, in which vaso-dilatation is produced by the induction of an artificial fever; (2) blocking of primary nerve trunks by para-vertebral injection of local anæsthetics; and (3) spinal anæsthesia. In the last two methods the vaso-constrictor fibres are temporarily blocked and the accompanying rise of surface temperature noted. My own experience has led me to doubt whether these tests can invariably be regarded as reliable guides. Any temporary functional change brought about by these methods when rendered permanent by operative interference may, in the course of time, be followed by corresponding organic changes, the temporary result being thus improved upon.

I can best illustrate this point by reference to a series of barium enema radiograms following sympathectomy for Hirschsprung's disease. A few weeks after division of the appropriate nerves the bowel is seen to be much smaller and more active, but if the observations be continued over a period of one or two years it will be found that the improvement is progressive so that the later result may be called a veritable cure when the earlier condition was merely a great improvement. It will be clear that the subsequent organic changes in the bowel wall could not possibly be estimated or deducted from any observance of the immediate and temporary effect produced by spinal anæsthesia. I have seen a similar sequence in cases of presenile gangrene where the rise of surface temperature following spinal injection has actually appeared insufficient to justify operation and yet, after a sympathectomy, the ultimate result has been very satisfactory. It must not be assumed however that such delayed results are to be seen in all sympathectomies; there are indeed some diseases, notably Raynaud's, in which a compensatory mechanism appears partially to reverse the effect in the course of time and so upsets the pre-operative prognostication in the opposite direction. The results of these tests must therefore not be accepted without critical consideration. Repetition of pre-operative investigations may enhance their value; for example, the repeated finding of occult blood in the fæces will thus often lead to an accurate diagnosis when its solitary demonstration might leave one hesitant.

The acumen of the clinician is as needful to-day as it ever was, but if the evaluation and interpretation of various tests now occupy more of his attention and the purely clinical examination less, I believe that in the long run our patients are not the losers.

INDIGESTION

(Dr. Adolphe Abrahams)

Indigestion is not an easy subject to define since all sensations which obtrude themselves into consciousness and are apparently related to the alimentary canal are necessarily included in a clinical or symptomatic definition, although they may have no causal relation to the viscera either structurally or functionally. Per contra, true indigestion may be present when no complaint is referred to the digestive tract; for example, the insomnia which results from intestinal dyspepsia. Furthermore, grave and even mortal disease of the abdominal viscera may be present without even the most trivial alimentary symptoms. It is best to accept these difficulties and admit inconsistencies; for any value which may be attached to a discussion on indigestion will depend upon a practical use of the term which must include the complaint of loss or disturbance of appetite; of vomiting, abdominal pain, or flatulence; and of discomfort or of vaguely unpleasant sensation in the abdomen. Not one of these symptoms, not even acute abdominal pain, will aid a distinction of organic from functional disease of the alimentary canal.

Ryle's classification of the dyspepsias is convenient and comprehensive: (1) mechanical; (2) irritative; (3) nervous or psychogenic; (4) toxic or infective; and (5) habit.

The *mechanical* causes for dyspepsia are quickly dismissed. They include deformities of the stomach resulting from ulceration, whether benign or malignant, and occasionally other extragastric structural causes for interference with gastric motility.

The *irritative* group comprises what is generally accepted as reflex dyspepsia, the disturbances (chiefly of motility) resulting from extragastric disease such as chronic appendicitis, chronic cholecystitis, and pelvic disease. An overloaded colon can act as a source of irritation and a wider acceptance brings into the group an almost unlimited number of debatable causes such as eyestrain. It must be pointed out that gastric and duodenal ulcer produce pain by precisely the same mechanism acting as a source of irritation, though the source is within the stomach and not more or less remote.

The *toxic* group includes oral infection, excess of alcohol and tobacco, and grossly improper food. The dyspepsia of phthisis might come into this category. Ryle includes intestinal auto-intoxication, but in my opinion it is better to indict constipation upon a mechanical basis. Other nebulous toxic causes for dyspepsia will be found in nephritis and pregnancy.

Habit dyspepsia—the dyspepsia resulting from overwork, insufficient exercise, lack of interest in or absence of occupation. This group is only artificially separable from the nervous group inasmuch as the diet proper to an individual in good spirits and with opportunity for recreation and rest may induce dyspepsia in circumstances of worry, fatigue, exhaustion, or depression.

In the *nervous* group we should place gross disorders of the appetite such as bulimia, pica, or anorexia nervosa, air-swallowing, eructations. The gastric crises of tabes naturally occur in this connexion, although Ryle places them in the irritative group. Disturbances of the sympathetic nervous system remind one of the alimentary symptoms in Addison's disease apart from the disequilibrium which leads to so much functional disorder.

Of the *symptoms* calling for special consideration, abdominal pain has many extra-alimentary causes as well as those of abdominal visceral origin and much care and patience must be expended over the anamnesis. Frequently, for example, the pain which points to a grave disease of the heart is labelled indigestion when a careful interrogation would show that exertion, possibly of a comparatively slight degree, was really responsible.

Genuine chronic abdominal pain is rarely continuous; when it occurs malignant disease or ulcer which has penetrated and become adherent must be thought of. Peptic ulcer may be present without the production of any symptoms and advertise its existence for the first time by perforation or hæmorrhage. But ulcer is usually suspected on the history of pain occurring at fairly regular periods after meals, related to the nature and quantity of the food, relieved by vomiting—if vomiting occurs—and by alkalis with remissions of complete well-being which tend to become shorter and less frequent as cicatrisation progresses. As has been suggested, the mechanism by which pain is produced is in no way peculiar to ulcer, and extragastric lesions such as a chronically inflamed appendix or gall-bladder or visceroptosis may present a close simulation which only radiography will decide. Many physicians refuse to admit the possibility of gastralgia in the absence of an organic lesion; yet it seems that in some cases one must assume a hypothetical hyperæsthesia of the gastric mucosa which may be related to certain foods and even to the interpretation of normal physiological occurrences in terms of painful sensations by appropriate lowering of the threshold of consciousness. As regards other, less definable symptoms, the effect upon the sympathetic nervous system of the higher centres enables us to understand how any depressing influence, grief, worry, anxiety, and fatigue, for example, leads to chronic dyspepsia in a predisposed subject. The disturbance is of the nervous system, not of the alimentary canal.

With this impression of the ætiology of dyspepsia in the absence of an organic lesion, it is essential that we should apply ourselves to the details of a sufferer's life. We realise that in some instances a complete revolution in the patient's living and circumstances, something quite outside our therapeutic armamentarium, may be necessary to distract his attention from his viscera. Some faulty habits of hygiene we may correct, especially irregularity and carelessness of meals and of eating. Perhaps we insist unduly upon exercise, but its absence generally means a badly ordered life with insufficient recreation, so that our solicitude benefits indirectly.

In respect to diet we are often too fussy and ceremonial. This is really the fault of our patients in their insistence upon the provision of a "diet sheet." This request it is easy to understand. A patient not unnaturally resents mass production therapy; he likes to regard himself as an individual problem and expects a dietary which has been elaborated for his particular requirements. Moreover, he succeeds in this way in transferring the responsibility for his recovery to his doctor and exonerates himself from personal effort. Yet diet should play a very small part in the therapy of "nervous indigestion." Idiosyncrasies must of course be respected, but these it is impossible for us to deduce or guess. Apart from these a dyspeptic should be encouraged to accept as a principle that what has once agreed with him may in future be permitted notwithstanding his impression of its unsuitability on subsequent occasions. The alternative of excluding everything which has disagreed will eventually lead to the elimination of everything edible and even cold water. Dyspepsia from relative starvation is probably more frequently encountered than dyspepsia from over-eating unless chronic gastritis is present. The really serious disturbances of the nervous system responsible for gastro-intestinal symptoms bring the patient within the province of the psychotherapist or even the alienist.

SPECIAL ARTICLES

THE NECESSITY FOR A SAFE MILK-SUPPLY *

By G. S. Wilson, M.D., F.R.C.P., D.P.H.

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Milk is a valuable food, and so far as its nutritive properties are concerned it is not an expensive food. Its importance in infant feeding, its power to stimulate the growth of under-nourished school-children, its easy assimilability by the sick and convalescent, and its provision of a wholesome source of energy to the normal population, amply justify for it a very special place in the human dietary. It is therefore all the more surprising to consider that, while rigid control is exercised over the purity of water-supplies, of meat, and of certain other foods, there are no public health regulations that ensure in practice the cleanliness and safety of our milk-supplies.

Cleanliness and Safety

Before proceeding further, it is important to define our terms. It is often assumed that "cleanliness" and "safety" are synonymous. This is a mistake. By "cleanliness" I understand the freedom of milk from extraneous matter, from pus, from blood, and from an undue number of micro-organisms, especially those of the putrefactive type—using this term in its broadest sense. By "safety" I mean the freedom of milk from pathogenic or potentially pathogenic micro-organisms and its consequent liability to give rise to infective disease in human beings consuming it. Many unclean milks, though æsthetically undesirable, are perfectly safe to drink, while very clean milks may, as the literature of milk epidemics shows, be highly dangerous.

It is perhaps desirable to elaborate this point in order to render it clear. The commonest pathogenic organisms that have been found in milk are: the tubercle bacillus responsible for tuberculosis; the bacillus of contagious abortion responsible for undulant fever; the typhoid, paratyphoid, food-poisoning, and dysentery bacilli responsible for enteric fever, acute gastro-enteritis, and dysentery; hæmolytic streptococci, responsible for scarlet fever and septic sore-throat; and the diphtheria bacillus, responsible for diphtheria. Of these, the first two gain access to the milk from the cow's udder, while the remainder are usually introduced by human beings who are either carriers of these organisms or are suffering from an actual attack of the disease caused by them. With the exception of the tubercle bacillus, milk that is produced under the most cleanly conditions from tuberculin-tested herds is almost as subject to contamination with the remaining organisms as is milk that has been produced without any special regard to sanitary precautions. The reason for this is that contamination with pathogenic bacteria of human origin takes place quite unconsciously, a few organisms finding their way into the milk from the fingers or throat of the milker or other person handling the milk. Once the organisms have been introduced, even in very small numbers, multiplication is liable to occur, since milk, clean or unclean, is an excellent nutrient medium for the growth of bacteria. To avoid contamination from human sources medical inspection of the personnel, combined with bacteriological examination of the secretions and excreta, is sometimes recommended, and is in fact practised in many parts of the United States of America; but, while occasional long-standing carriers of pathogenic micro-organisms may be detected by this method, it is quite incapable, short of daily examination of every member of the milk personnel, of bringing to light the early clinical cases, the subclinical infections, and most of the purely latent infections in healthy carriers, which constitute so grave a menace to the safety of the milk-supply.

Milk-borne Disease

At present a great deal of the raw milk sold in this country is neither clean nor safe. Much of it, besides having a high bacterial count, contains manure, pus, and even blood, the latter two coming from animals with diseased udders. Such a condition excites no protest, because these substances are conveniently obscured by the suspended fat globules in the milk. One wonders how many people would accept bread or sugar that was soiled with such products!

The frequency of tuberculous infection of the milk-supply has recently been the subject of a special inquiry, and the figures show that a proportion of raw market milk samples, varying in different parts of the country from 2 to 13 per cent., with an average figure of 6·7 per cent., contains living virulent tubercle bacilli (Report, 1932).

The presence of *Brucella abortus*, an organism responsible for contagious abortion in cattle and for undulant fever in man, is widespread in raw milk. Since my original observations made with Miss Nutt at Manchester (Wilson and Nutt, 1926), Beattie has reported 34·9 per cent. of positive samples among mixed milks in Edinburgh, J. Smith 28·3 per cent. in Aberdeen, Morgan 37 per cent. in Cardiff, Priestley 22·3 per cent. in Burnley, and Rowlands 17 per cent. in Bangor. That is to say, at least 20–30 per cent. of raw market milk samples contain this organism.

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* Being the substance of a paper read before the Agricultural Section of the British Association at Leicester on Sept. 12th, 1933.

Mastitis in cows is extremely common in this country, and hæmolytic streptococci are frequently present in milk. Since the part played by these organisms, when of bovine origin, in the causation of scarlet fever and septic sore-throat is still under discussion I shall not quote exact figures of their incidence.

Turning now to the practical outcome of these observations, let me give a few figures to indicate the extent of the danger to the public health caused by infected milk (see Table).

Outbreaks of Milk-borne Disease in Great Britain 1912–1931

Disease.	No. of outbreaks.	No. of outbreaks in which number of persons affected is stated.	No. of persons affected in these outbreaks.
Scarlet fever and septic sore-throat	31	25	3087
Diphtheria	13	12	732
Typhoid fever, paratyphoid fever, and dysentery	25	22	1843
Gastro-enteritis ..	12	10	3759
Total	81	69	9421

Note.—For previous outbreaks see Savage (1912).

These outbreaks are merely those of which I have been able to collect records, and probably represent but a fraction of the total number that have occurred. Many outbreaks are either not reported at all or appear only in the annual reports of the local medical officer of health. If the reports of every medical officer of health in the country were systematically examined for the last 20 years there is little doubt that the list of outbreaks of milk-borne disease could be considerably amplified.

It is further necessary to remember that the list given above refers only to epidemic disease. Many cases of sporadic infection by milk undoubtedly occur, but their source of origin is never traced or often even suspected.

The main disease that occurs sporadically is tuberculosis. From the incidence of cases of tuberculosis notified to the Registrar-General it may be calculated that approximately 4500 cases have occurred annually since 1912, due to the bovine type of bacillus (see Report, 1932). The total number of cases of bovine infection during the last 20 years may therefore be estimated at about 100,000.

Undulant fever is likewise borne by milk, and it appears probable that there are about 500 cases a year occurring in England and Wales. This figure has been arrived at by three separate calculations, all of which agree closely (Wilson, 1932). I may perhaps be excused if I give but one of them. Of 399 Widal sera examined by a number of different workers in Great Britain during 1928 to 1932, and about which adequate records are available, 21 per cent. agglutinated typhoid or paratyphoid bacilli in a significant titre, while 3·5 per cent. agglutinat *Br. abortus* to a titre of 1/80 or over, which in patient with pyrexia has generally been found to b diagnostic of active infection. The proportion o these sera having agglutinins to the enteric grou was therefore six times that having agglutinins t the brucella group. The Registrar-General's statistic for 1930 show that 2899 cases of enteric fever wer notified in England and Wales. If we take a sixt of this number we may conclude that approximatel 480 cases of undulant fever occurred in the same yea Since it is not known how long undulant fever ha been prevalent in this country, the disease havin only recently been recognised, no figures of its tota incidence can be given.

Summing up, it may be said that during th 20-year period 1912–1931 there have been at leas 81 outbreaks of milk-borne disease, affecting abou 10,000 persons. During the same time abou 100,000 persons have contracted tuberculosis o bovine origin through the consumption of milk and an indefinite number have suffered from undulan fever, due to infection with *Br. abortus*.

These figures, I must again remind you, afford bu a conservative estimate of the total amount o milk-borne disease. They refer merely to primar infections and do not include the secondary cases which are often so numerous in outbreaks of septic sore-throat, scarlet fever, and diphtheria. Incomplete as they are, they are nevertheless formidabl and demand attention from all who are genuinel anxious to improve the milk-supply.

Unsafe milk is a menace to the community, and—if only the farmers would realise it—a menace to agriculture. The danger of polluted water was early recognised, and during the last fifty years such active measures have been taken to protect against it, that water-borne disease has now been almost banished from the large towns of this country. The danger of polluted milk still remains unrecognised by a large proportion of the population, and it is open to any farmer to distribute milk heavily infected with tubercle or other pathogenic bacteria, and be paid for doing so.

The criticism is sometimes heard from those who do recognise the present position that more harm than good will accrue by informing the public of the danger of infected milk. By laying stress on the danger of milk one will merely deter the public from including a most wholesome article of food in their dietary and tend therefore to favour malnutrition, particularly of the younger members of the community. I am fully prepared to meet this criticism. We English are often accused of shutting our eyes to facts, and perhaps justly so. Without wishing to lay undue stress on the danger of milk, I want to leave no one under any misapprehension of the potential infectivity of raw milk, even that coming from graded herds. Until this fact is generally appreciated and steps are taken to render milk safe for human consumption, the position with regard to milk cannot be considered as other than highly unsatisfactory.

Pasteurisation

What we must demand is clean and safe milk. Clean milk can be obtained even in unfavourable surroundings from animals with healthy udders by practising a few simple hygienic precautions, such as washing of the hands and udder and sterilisation of all utensils. Safe milk can be obtained at present only by heat treatment. If adequately performed, it appears that low-temperature pasteurisation by the holder method can be relied upon for the destruction of all pathogenic micro-organisms in milk. The alteration in nutritive properties caused by this process is very slight, and so far as we know consists almost entirely in a diminution in the vitamin-C content, which can be easily remedied by the addition of fresh orange juice to the diet.

Many objections have been raised to pasteurisation, but in practice it has worked remarkably well. In the United States of America an average of about 88 per cent. of the milk in the cities with a population of 10,000 and over is pasteurised, while in the cities with a population of 500,000 and over, 98 per cent. is pasteurised (Frank and Moss). It is interesting to note that in the United States milk-borne epidemics are becoming more and more restricted to the small country towns and rural districts, where most of the milk is consumed raw; from the large cities they have been practically banished (Report, 1931). In Toronto the careful work of Price has brought very strong evidence in favour of the efficacy of pasteurisation. Of 220 juvenile patients suffering from some form of tuberculosis 190 proved to be infected with the human and 30 with the bovine type of bacillus. Without exception the 30 cases of bovine infection were in children who had come from districts of Ontario where milk was consumed raw. In Toronto, where compulsory pasteurisation has been in force since 1915, not a single case of infection with the bovine type was found.

In this country pasteurisation is extensively practised in some of the larger towns, such as Manchester, Salford, Portsmouth, and Glasgow, while in London, thanks to the voluntary efforts of the larger dairy companies, 95 per cent. of the milk is treated by this process. As an indication of its protective value I may quote some interesting figures referring to the incidence of undulant fever, a disease which I have been studying for some years. Altogether in London nine cases have been detected. One case occurred in 1917 before pasteurisation was common. Four patients had returned from a holiday in the country; one of them had consumed raw goat's milk and three raw cow's milk from the local farm. Only four patients were apparently infected in London itself, and of these two drank Certified, one Grade A raw, and one ungraded raw milk. Not a single case therefore has been recorded in a person who habitually drank pasteurised milk, and this fact is true not only for London but for the whole of Great Britain. It is probably because most of the milk in London is pasteurised that the number of cases of undulant fever has been so small.

Constructive Proposals

As my contribution to the subject of milk production and distribution in relation to nutrition and disease, I should like to make the following constructive proposals:—

(1) All milk in urban areas of sufficient size to enable satisfactory control to be exercised should be subject to compulsory grading. At present only a small fraction of the total milk-supply is graded. The remainder is simply "milk" which is not obliged to conform to any standards of cleanliness or safety whatever. The Milk and Dairies (Amendment) Act, 1922, and the Milk (Special Designations) Order, 1923, made under Section 3 of this Act, suffer from the defect that they penalise the highest grade of producer, insisting on his paying a licensing fee to produce clean milk, and on his conforming to rigid regulations and standards for the breach of which he is liable to legal interference. The stimulus, therefore, to produce high-grade milk is not at the moment a strong one. Under a system of compulsory grading, standards would be laid down to which even the lowest grade would have to conform. By gradually raising the level of these standards it should be possible, as American experience has shown, to bring about a gradual improvement in the cleanliness of the milk-supply.

(2) Powers of compulsory pasteurisation of all milk should be given to any of the larger urban authorities applying for them. For the sake of expediency it might be desirable to make an exception for milk coming from tuberculin- and *abortus*-tested herds, though, as has been pointed out, such milk is still subject to contamination from human sources. The success of this measure will depend to a considerable extent on the care with which pasteurisation is carried out. It is becoming increasingly clear that pasteurisation can be effective in destroying all pathogenic organisms only if it is performed in a plant free from defects of design or structure, and by operators who are skilled and under constant supervision. At present a considerable amount of milk is pasteurised by wholly unsuitable methods, with the result that not all so-called pasteurised milk is free from tubercle and other pathogenic bacilli. If permissive powers of compulsory pasteurisation are to be granted, the local authority, acting on the advice of the Minister of Health, should refuse to license plants which are of unsuitable design or which experience has shown to be inefficient in operation, and the onus should be put on the local authority for the control of every plant within its area. Furthermore all pasteurised milk should be so labelled and, with the exception of sterilised milk, it should be made an offence to sell milk which has been heated in any other manner than that prescribed by the official order for the time being.

(3) In order to stimulate the demand for clean milk a prepasteurisation standard should be laid down to which all milk which is to be pasteurised must conform. The exact nature of this standard would obviously have to be discussed with care. If at the same time as this measure was introduced the larger dairy companies would adopt a system of payments favouring the clean producer and penalising the unclean producer, there would be added to the necessary legal sanctions the powerful stimulus of economic reward.

I have said nothing about the eradication of tuberculosis, contagious abortion, or mastitis from cattle, partly because they are veterinary problems and are a sufficient menace to the health of the animal population to be dealt with on their own account by the Ministry of Agriculture, and partly because their eradication must be a matter of long years, and we cannot expose the public to constant danger while this is being accomplished. In any case, even if the cattle were freed from udder disease, pasteurisation would still be desirable—at least in the larger urban areas—to guard against the infection of milk from human sources.

The milk consumption in this country is low compared with that in many other parts of the world, and in my opinion will continue to be so as long as potentially dangerous raw milk is the only milk available to a considerable section of the general public at a reasonable cost. If the farmers make a serious attempt to produce clean milk, and if Parliament will grant urban authorities the power to insist that all liquid milk sold for human consumption shall be pasteurised, the time will come when the medical officer of health will feel free at last to recommend the unrestricted use of milk as a food and a beverage without incurring, as he does at present, the moral responsibility for endangering the health of those under his care.

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IRELAND

(FROM OUR OWN CORRESPONDENT)

ELECTION FOR THE UNIVERSITY OF DUBLIN

THE election of a representative of Dublin University in the Dáil in place of the late Sir James Craig is likely to take place in the last week of the present month. Two candidates have issued addresses to the electors—Mr. Kenneth Dockrell, K.C., and Dr. Robert J. Rowlette. Each of the candidates, in his address, emphasises his interest in questions of health. Mr. Dockrell asks for a return to the old custom of the University choosing as one of its representatives a member of the legal profession, and he suggests that the representatives should not necessarily be members of the college staff. On the other hand, Dr. Rowlette, who is King's professor of materia medica in the School of Physic, reminds the electors that for the past 15 years they have consistently chosen one of their representatives from the largest of the professional schools, and he emphasises the point that the care of health is one of the most important duties of the State. The voting at the election is by post. All those who are on the register are entitled to vote, whether resident in the Irish Free State or not, and as a matter of fact a large proportion are resident in Great Britain or Northern Ireland.

POST-GRADUATE COURSES AT BELFAST

For some time past lectures for post-graduates have been given weekly at the Royal Victoria Hospital, Belfast. This year, however, the University was approached by the authorities to arrange an intensive course for insurance practitioners on a bigger scale. It was decided that the last fortnight of September, just before the opening of term, was the most suitable time. Dr. R. H. Hunter undertook the duties of secretary, and a syllabus was drawn up to include instruction in clinical medicine, minor surgery and surgical diagnosis, venereal diseases, skins, and ophthalmology. This part of the instruction was given at the Royal Victoria and Mater Infirmorum Hospital in the mornings. In the afternoons the University undertook lectures and demonstrations in pathology, applied biochemistry, anatomy, and public health. The course began on Sept. 18th, over 50 practitioners being in attendance. They were divided into two groups and attended the wards and out-patient department alternately during the mornings. Emphasis was laid on diagnosis and treatment and the actual demonstration of selected cases. Outstanding features of the afternoons spent at the University were the set discussions on medical and surgical cases, which provoked much interest and led to good discussions. Towards the end of the course the practitioners entertained those who had taken part in the work of teaching and organising. Dr. J. W. Dawson, of Newtown Hamilton, presided, and Mr. J. M. Andrews, the Minister of Labour, was present. The gathering closed what had been a very pleasant experience for all concerned. It is hoped that a similar course will be held next year.

MEDICINE AND THE LAW

Statement Refused to Coroner's Officer

A CORONER has a statutory duty to examine at an inquest "all persons who tender their evidence respecting the facts, and all persons having knowledge of the facts whom he thinks it expedient to examine." For convenience he usually obtains information in advance as to the names of prospective witnesses and the nature of their evidence, using for this purpose the services of the coroner's officer. The coroner's officer is entirely unknown to the law, but partly perhaps because he is often a policeman it seldom occurs to anyone to challenge his status or authority. At a recent inquest, arising out of the killing of a man by the woman pilot of an aeroplane used for exhibition flights at Barmouth, the coroner for Merionethshire is reported to have commented severely on the fact that the pilot had been advised by her legal representative not to make a statement to the coroner's officer. The coroner is said to have described this advice as the worst possible, because the result was an impression that there was something to be concealed. The comment has caused legal practitioners to protest that the giving of such statements is quite voluntary, and that circumstances may well justify refusal. Naturally, folk who think the facts may expose them to a criminal charge take legal advice at an early stage; they are probably advised to keep their mouths shut. The conditions of insurance policies have some influence in the same direction. If the coroner's officer turns out to be a policeman (in the Merionethshire case he seems to have been the chief constable of the county in person) the tendency to reticence may be strengthened. Nobody can refuse to give evidence at an inquest on the ground of exposure to self-incrimination. He cannot escape being sworn, but thereafter can claim such privilege as the law permits. In one of the leading cases associated with the original Thomas Wakley's name the High Court confirmed the principle that witnesses in a coroner's court are not bound to incriminate themselves, and must guard their own interests when they give evidence. As regards statements of prospective evidence, however, it would seem that solicitors have a perfect right to advise a client to say nothing. They might even argue that the coroner's comment on the exercise of the right of preliminary silence is possibly unfair to anyone whose conduct may be called in question. The Court of Criminal Appeal not long ago pointed out that in a case where a man had a statutory right to defer his defence his exercise of that right must not be relied upon as corroboration of an accusation.

"Physio-medical" Treatment

An inquest was held near Manchester last week by Mr. R. Stuart Rodger upon the death of a 6-year-old girl who had been treated by Mr. C. C. Abbott, the "physio-medical practitioner" of Leigh, whose use of a form of the Abrams box has been discussed on similar occasions in the past. Mr. Abbott, in his evidence, said the patient had suffered from pleurisy, and there were indications of empyema in the right lung. He found no definite indications of pus. He did not make a bacterial examination; he put a sample of blood into his machine to see if the child was anæmic. Dr. B. Sandler, senior resident medical officer at the Park Hospital, Davyhulme, described the results of his post-mortem examination. The child was suffering from pericarditis, chronic congestion of the kidneys, and general blood poisoning. There was an abscess on the right lung and another outside the heart-bag; he found six or seven ounces of pus, which must have taken seven or eight weeks to accumulate. External treatment and "physio-medical" treatment, such as had been described, could have had no effect on an abscess which required opening. He thought that with proper treatment she would have recovered. In answer to a specific question from the coroner, Dr. Sandler said in his opinion the child had been neglected; if he himself had treated a patient in a similar manner he would consider he had been guilty of criminal negligence; if the empyema had been properly treated the child's life would probably have been saved. Mr. Abbott protested that it was unfair that he was not invited to be present at the post-mortem examination. He had perhaps a stronger grievance when the coroner refused to allow him to put a question to Dr. Sandler. Mr. Rodger said he could not permit one witness to cross-examine another. If, however, A is giving evidence of criminal negligence against B, it is surely not unusual to allow B to ask A questions. The coroner, summing up the evidence to the jury, said he could not judge of Mr. Abbott's experience, but in this case Mr. Abbott had failed to ascertain the root cause of the child's protracted illness which had proved fatal. It was obvious from the evidence that Mr. Abbott had made a mistake; we were all liable to make mistakes—and mistakes might cost a life. He did not think Mr. Abbott made a criminal mistake; he recommended the jury to return a verdict of "death from natural causes." The jury did so, adding a rider that the parents would have been well advised to have called in a medical practitioner, other than Mr. Abbott, at a much earlier stage of the illness.

THE MEDICAL DEFENCE UNION

THE annual general meeting of the Medical Defence Union was held at 49, Bedford-square, London, W.C.1, on Thursday, Sept. 28th; Dr. W. S. A. Griffith, the president, in the chair, and 23 other members were present. In moving the adoption of the annual report of the Council for the year 1932–33, Dr. Griffith said that the general body of members knew little how strenuous was the work of their Council, and that a vote of thanks to them for that work should be no formal expression. The only important branch of professional work not represented on the Council was dentistry, an omission that they were ready to remedy. He continued: "Our membership has increased, our financial position is satisfactory, and our success in dealing with cases in which our assistance has been sought has, on the whole, been most gratifying. In one case where damages were claimed against two of our members an adverse decision was given, but by those who know the facts the verdict will always be regarded as a miscarriage of justice. Unfortunately we were unable to take further action as we were advised that an appeal had little chance of success. I can assure you that no effort is spared to provide our members, when attacked, with the best defence obtainable. This is fully appreciated by the vast majority of our members, and it is a very rare occurrence for a member to question the steps taken on his behalf." Dr. Griffith, however, then referred to a case where a provincial member asked for legal assistance in connexion with an inquest to be held in two days' time; prompt steps were taken to instruct a local firm of solicitors known to the Union, but the member pressed that his own solicitor should coöperate with them and take part in conference with counsel. When it was explained that the responsibility for the defence must rest solely with the Union's legal advisors, the member took the case out of the hands of the Union and instructed his own solicitor, subsequently complaining of the inadequacy of the protection afforded to provincial members. A sub-committee appointed to investigate the facts came unanimously to the conclusion that every step necessary for the protection of the member's interests had been taken, and that the member's natural anxiety in the matter had led to misunderstandings which would not otherwise have occurred.

During 1932 1681 new cases were dealt with by the Union, which, said Dr. Griffith, gave an average of over five on each working day in the year. Some of these cases were trivial and could be disposed of by letter, but others might involve correspondence extending over weeks and even months. Having had many opportunities during many years of seeing the way in which the business of the Union is handled by the staff, he doubted if any organisation could be better conducted, owing to the admirable organising ability of the secretary. A new sublease from Epsom College of the whole of the ground floor and part of the basement of 49, Bedford-square had provided valuable accommodation for the work, and Dr. Griffith expressed the gratitude of the Union to the College authorities for the consideration shown. Dr. Griffith concluded: "In two years' time the Union will reach its Jubilee, and I hope members will find some way of celebrating this and of placing on record their appreciation of the satisfactory progress the Union has made since its inception. Few of those who laid the foundations of this great enterprise have lived to see its fruition, but we all may be justly proud of the invaluable work that has been accomplished."

The report of the Council and financial statement for the year 1932 were then adopted. Dr. Henry Robinson, Mr. E. Pearce Gould, and Dr. Elizabeth Bolton, who retired under Article 28, were re-elected. The auditors, Messrs. Lewis, Hardy and Co., were reappointed, and a vote of thanks to the president and the Council for their services during the past year was carried with acclamation.

WARRINGTON INFIRMARY NURSING-HOME.—A booklet has been issued explanatory of the arrangements connected with the recently opened private nursing-home attached to this hospital. There is accommodation for 25 patients, 7 in two semi-private rooms and the rest in single rooms. The charge for a bed in the semi-private ward is three and a half guineas a week, and from five guineas upwards for a separate room. These charges include board, ordinary medicines, dressings, services of nurses, and use of the theatre. Patients can be attended by their own medical man, the hon. medical staff having no responsibility except by arrangement with the medical attendant.

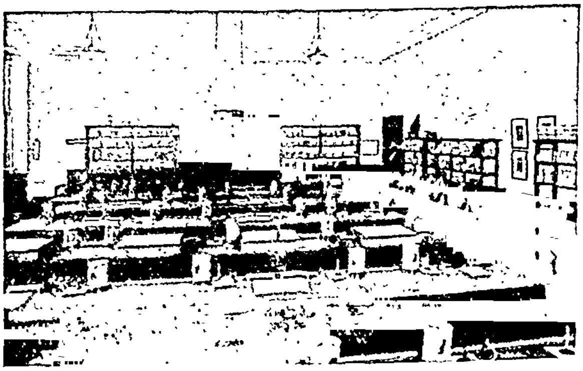
UNIVERSITY OF BRISTOL

INAUGURATION OF THE DEPARTMENT OF PREVENTIVE MEDICINE

On Sept. 29th the new department of preventive medicine was formally opened by the Minister of Health, Sir Hilton Young, in the presence of the Vice-Chancellor and other officers of the University, the medical officers of health to the city, and representatives of most of the neighbouring local authorities. The department has been established to undertake public health laboratory work for the West of England. The work for the city of Bristol was originally carried out in the university college, from which the University of Bristol arose, and was later taken over by a municipal laboratory. Its execution in the new department has been rendered possible by a new agreement between the University and the city council.

The Minister of Health, in formally declaring the new department open, said that he had opportunities to discern the need for the avoidance of waste in the use of the forces which make for the better physical welfare of the community. It sometimes occurred that there was no coördination between essential forces working for the same end, such as the University with its scientific knowledge and the city with its municipal authority. He therefore congratulated those concerned on their foresight and wisdom in bringing about this coördination in Bristol and on their devotion to the public interest in putting this ideal before their individual interests. The Minister stressed once again the importance of preventive rather than remedial medicine. While not for a moment depreciating the great remedial services, he felt that if we could devote more of our energy in the shape of funds, public and private, to preventive medicine, we should increase the efficiency of the nation.

After the opening ceremony the guests were entertained by the University to luncheon in the Students' Union, when Prof. R. H. Parry spoke of the unrivalled opportunities for research available to the members of the department, and of the laboratory facilities offered under the new scheme to every general practitioner in the area.



One of the Laboratories.

The department is housed in Canynge Hall, which occupies the whole frontage of Whiteladies-road between Whatley-road and the road to Clifton Down Station, and is situated about half a mile from the main University buildings. Canynge Hall is a large stone building of four stories and basement which was originally built as a hotel, and was then purchased by the University and used as a residential hall for men students. It has now been reconditioned to house most of the medical departments of the University. The ground floor accommodates those of medicine, surgery, obstetrics, and pathology, and two lecture rooms for the common use of these departments. The first floor is devoted entirely to the department of preventive medicine, and on the second floor research rooms for the departments of medicine, surgery, obstetrics, and pathology have been provided, while space has been reserved for a department of analytical chemistry which it is hoped to establish soon. In the basement rooms are devoted to the inoculation and housing of laboratory animals and to the preparation and storage of media. The whole building is fitted with central heating by an efficient gas plant.

The Main Block.

[Photographs by F. Bromhead, Bristol.

The department affords modern facilities for the laboratory investigation of various pathological conditions and foodstuffs, and includes fully equipped histological, bacteriological, serological, and biochemical laboratories, in addition to rooms for taking specimens directly from patients. A special room is devoted to milk examinations. Provision has also been made for expeditious reports on specimens and for the keeping of records. An up-to-date library facilitates access to relevant literature. Dr. I. Walker Hall, who has been succeeded in the University chair of pathology by Prof. Geoffrey Hadfield, and who has been responsible for the planning of this new extension of the medical school, has been appointed director of the department and curator of Canynge Hall; Dr. R. H. Parry, the medical officer of health for the city, holds the chair of preventive medicine; and the senior and junior pathologists are respectively Dr. Allan Gray, formerly assistant bacteriologist in the city of Liverpool bacteriological laboratories, and Dr. Doris Stone.

On the day of the opening and on the day following the laboratories were open for inspection. Demonstrations included tests for the differentiation of raw from pasteurised milk, and the processes relating to examinations to detect ropy and bleeding bread, the carriage of infection by flies, and tuberculous milk. A number of large histological microphotographs used in the teaching of pathology were on view. Lantern demonstrations on the History of Surgery and of Obstetrics were also held and were evidently appreciated.

THE MEDICAL REGISTER

UNTRACEABLE PRACTITIONERS IN 1933

We are asked by the Registrar of the General Medical Council to publish the following list of medical practitioners who have not replied to his inquiries as to the accuracy of their addresses. Anyone, wherever resident, who finds his or her name included in this list should communicate immediately with the Registrar, 44, Hallam-street, Portland-place, London, W. 1, otherwise the name will be omitted from the next issue of the Medical Register. There may be some who have replied while this list was in the press. The date given is that of registration; the qualification is the principal one registered. The letters (E), (S), and (I) denote registration at the English, Scottish, or Irish branches respectively; (Col) and (For) denote registration in the Colonial and Foreign Lists of the Register. Those marked (S) should communicate direct with the Registrar of the Scottish Branch Council, 12, Queen-street, Edinburgh.

Arnott, Grant, M.B., 1897(E).

Banatvala, Sir H. E., M.R.C.S., 1882(E).
Bester, Pieter, M.B., 1926(E).
Blackall, Patrick, M.D., 1885(I).
Brookes, Robert, L.M.S.S.A., 1900(E).
Brown, Wilbert H., M.R.C.S., 1927(E).
Burchell, Ernest, M.R.C.S., 1888(E).

Clarke, John J., M.R.C.S., 1915(E).
Cline, Eric C., M.R.C.S., 1915 (E).
Conlin, Patrick J., M.B., 1920(I).
Cooper, Richard A., L.R.C.P. & S., 1921(S).
Cresswell, Norman, L.A.H., 1926(I).
Crouch, Ernest J., M.R.C.S., 1875(E).

de Wytt, William H., M.B., C.M., 1895(S).
Dorsch, Carl E., M.B., Ch.B., 1922(S).

Fell, Walter, D.M., 1881(E).
Fraser, George J. M., L.R.C.P. & S., 1911(I).

Garde, Henry C., F.R.C.S., 1878(I).

Hannesson, Hannes, M.R.C.S., 1927(E).
Harrison, Sydney G., M.R.C.S., 1900(E).
Henderson, Archibald, M.B., 1928(E).

Javitz, Leon, M.D., 1915(For).
Jones, David W., M.R.C.S., 1914(E).

Kendrick, Montford A., M.C.P. & S., 1916(Col).

Lebon, Camille, M.R.C.S., 1906(E).
Legh, Harry L. de, M.R.C.S., 1889(E).

McAlister, Hector C., M.R.C.S., 1920(E).
McArthur, Arthur N., M.R.C.S., 1895(E).
MacAulay, Ambrose, L.A.H., 1922(I).
McBurney, John H., M.B., 1895(I).
McCartan, Patrick, L.R.C.P. & S., 1910(I).
McCarthy, Daniel T., M.B., 1922(I).
McCarthy, Ellen, M.B., 1926(I).
McCarthy, Randal, L.R.C.P. & S., 1892(I).
McCaughey, John G., M.D., 1902(S).
MacConaill, Michael A., M.B., 1925(I).
McConkey, John T., L.R.C.P. & S., 1915(I).
MacDermot, Edward C., L.R.C.P. & S., 1909(I).
McDermott, Jane M., M.B., 1926(I).
McDermott, Patrick A., F.R.C.S., 1880(I).
MacDonald, Herman A., M.B., 1893 (E).
McDonnell, John T., L.R.C.P. & S., 1917(I).
McElroy, Lilian, M.B., 1929(I).
McEnroy, Margaret, M.B., 1926(I).
McEntire, Ronald G. J., M.B., 1912(I).
McEntire, Samuel D. G., L.R.C.P. & S., 1914(I).
MacGeagh, Thomas E. F., M.R.C.S., 1878(E).
McGeorge, Margaret T., M.B., Ch.B., 1918(S).
McGillivray, Donald, M.R.C.S., 1900(E).
MacGuire, Constantine J., L.R.C.P., 1869(I).
MacHado, Leon S., F.R.C.S., 1911(E).
McIlvean, Douglas D., M.B., Ch.B., 1924(S).
McInnis, Archibald, M.R.C.S., 1915(E).
MacIntyre, Marion, M.B., Ch.B., 1910(S).
MacKay, Harvey, L.R.C.P. & S., 1905(E).
MacKen, Hubert, M.B., 1918(I).
McKenna, Francis H., M.B., 1925(I).
McKenna, Peter, M.B., 1888(I).
MacKenzie, Donald, M.B., Ch.B., 1928(S).
McKnight, Maude W. (now Mrs. Henry), M.B., 1922(E).
McLaughlin, Agnes, M.B., 1923(I).
MacLaughlin, Thomas, L.R.C.P., 1875(I).
MacLaughlin, Thomas H. K., L.R.C.P. & S., 1918(I).
McLean, James Y., L.R.C.P. & S., 1916(S).
MacLeod, Murdoch H., M.B., Ch.B., 1913(S).
McLeod, Thomas H., M.R.C.S., 1917(E).
MacMahon, Augustine P., M.B., 1907(I).
McMahon, John R., M.B., 1919(I).
McMenamin, John G., M.R.C.S., 1924(E).
McMurray, Wahab, M.D., 1881(I).
McMurtry, Walter C., M.R.C.S., 1913(E).
McNamara, Peter P., M.B., 1922(I).
MacQuillan, John W., M.B., 1881(I).
MacSweeny, John A., L.R.C.P. & S., 1917(I).
Madan, Hans R., M.B., 1921(E).
Maguire, Hugh G., L.R.C.P. & S., 1925(I).
Malik, Hatimbhai S. A., M.B., 1930(E).
Malkani, Shawkiram S., M.R.C.S., 1916(E).
Manley, Henry C., L.R.C.P., 1866(I).
Mann, Alexander, L.A.H., 1909(E).
Marquess, Thomas, M.B., 1926(I).
Marsack, Arthur E., L.R.C.P., 1883(E).
Martin, Francis A., M.B., 1928(I).
Martin, Harold P., M.R.C.S., 1905(E).
Martin, Henry O., M.B., 1926(E).
Martin, John E., M.B., C.M., 1896(S).
Masina, Dinshaw M., M.R.C.S., 1922(E).
Mattei, Charles, L.R.C.P. & S., 1888(E).
Matthews, John, *D.S.O.*, M.R.C.S., 1899(E).
Matthews, John B., *M.C.*, M.R.C.S., 1914(E).
Maurer, Hy. W., L.M.S.S.A., 1930(E).
Maxton, Archibald, L.R.C.P. & S., 1926(S).
Maye, John, M.R.C.S., 1882(E).
Mejias, Andrew, L.R.C.P. & S., 1929(I).
Membery, Giles G., L.S.A., 1900(E).
Menary, Vera G. M. (now Mrs. Burford), M.B., 1922(I).
Menon, Eleyedath K. K., M.R.C.S., 1931(E).
Menon, Karamathil P. G., L.R.C.P. & S., 1929(I).
Mikhail, Hakin M., M.R.C.S., 1928(E).
Miller, William, M.B., Ch.B., 1901(S).
Mills, Ieuan A., M.R.C.S., 1927(E).
Mills, John, M.B., 1890(I).
Mirylees, Oswald M., M.B., Ch.B., 1905(S).
Mohamed, Farid, M.R.C.S., 1917(E).
Mohan, Peter, L.R.C.P. & S., 1902(S).
Moloney, Patrick O'D., L.R.C.P., 1882(E).
Molony, Patrick B., L.R.C.P. & S., 1896(I).
Monod, Gustave J. P., F.R.C.P., 1910(E).
Moore, Arthur R., L.R.C.P. & S., 1892(I).
Moore, Edgecumbe W., M.B., 1913(E).
Moore, Francis J., L.R.C.P. & S., 1902(I).
Moore, Frederick F., L.R.C.P., 1876(I).
Moore, Peter H. L., M.R.C.S., 1926(E).
Moorhead, Andrew S., M.R.C.S., 1911(E).
Moran, Michael J., M.B., 1885(I).
Moreland, George, M.B., C.M., 1898(S).
Morressy, Patrick T., L.R.C.P., 1886(I).
Morrison, Cecil J. R., L.R.C.P. & S., 1925(S).
Morrison, Elizabeth, M.B., 1922(I).
Mortimer, Hector, M.B., Ch.B., F.R.C.S., 1914(S).
Mortlock-Brown, Constance A., L.M.S.S.A., 1917(E).
Moshal, Bernard, M.B., 1920(I).
Moss, Edith M. N., M.B., 1913(E).
Mostert, Hendrik Van R., M.B., 1925(E).
Mullarky, Robert E., L.R.C.P. & S., 1931(S).
Muller, David V., L.S.A., 1901(E).
Mullins, Patrick J., M.B., 1928(I).
Murnane, Helen M., M.B., 1920(I).
Murphy, Jeremiah F., M.B., 1923(I).
Murphy, John P., M.B., 1924(I).
Murray, Francis X., M.B., 1920(I).
Murray, Jeannie R., M.B., 1906(I).
Murray, John M., M.B., 1927(I).
Murray, Joseph, M.B., 1920(I).
Murray, Lilian M. S., M.B., 1928(E).
Myer, Leonard, M.R.C.S., 1906(E).
Myers, William G., L.R.C.P. & S., 1927(I).

Naik, Naranji R., M.R.C.S., 1912(E).
Nat, Bhagwant S., F.R.C.S., 1926(E).
Natesan, Tharmalingam K., L.M.S.S.A., 1925(E).
Neary, James F., M.B., 1908(I).
Neatby, Andrew M., L.R.C.P. & S., 1887(E).
Nel, Jacobus G., M.R.C.S., 1919(E).
Nelson, Cecil, M.B., 1921(E).
Nelson, Henry R., M.D., 1903(I).
Nelson, Thomas C., L.F.P.S., 1875(E).
Newman, Freda, M.B., 1917(E).
Newton, Henry A., L.R.C.P. & S., 1925(S).
Newton, John P., L.R.C.P. & S., 1905(S).
Nichol, Robert, M.B., C.M., 1892(S).
Nichol, Robert W., M.R.C.S., 1922(E).
Nicholson, John W., M.R.C.S., 1883(E).
Nixon, Arthur P., M.R.C.S., 1898(E).
Nolan, Andrew, M.B., 1929(I).
Nolan, Herbert F., L.R.C.P. & S., 1894(I).

Oakley (Mrs.), Mary A. (formerly van Ingen), M.B., 1913(E).
O'Brien, Catherine M., M.B., 1925(I).
O'Brien, Kathleen, M.B., 1927(I).
O'Brien, Michael J., L.R.C.P. & S., 1894(I).
O'Callaghan, Jeremiah, L.R.C.P., 1883(I).
O'Callaghan, Patrick, L.R.C.P. & S., 1927(I).
O'Connor, Carl, L.R.C.P. & S., 1918(I).
O'Connor, Gladys C. J., L.R.C.P. & S., 1920(I).
O'Connor, Roderick, L.A.H., 1911(I).
O'Doherty, Colman P., M.B., 1920(I).
O'Doherty (Mrs.), Maggie I., M.B., 1918(I).
O'Doherty, Vincent J., M.B., 1922(I).
O'Donoghue, Thomas F., L.R.C.P. & S., 1915(I).
O'Driscoll, John A., L.R.C.P. & S., 1914(I).
O'Driscoll, Thomas J., M.B., 1924(I).
O'Hagan, Patrick J., L.R.C.P., 1876(I).
O'Halloran, Anna M. K., M.B., 1917(I).
O'Keefe, Catherine R., M.B., 1925(I).
O'Keeffe, Edward J., M.B., 1914(I).
O'Keeffe, Eileen M., M.B., 1912(E).
O'Kelly, James J., M.B., 1909(I).
O'Mahony, Michael C., M.B., 1923(I).
O'Mahony, Nora, M.B., 1924(I).
O'Mahony, Thomas, M.B., 1916(I).
O'Neill, Cyril A., M.B., 1924(I).
O'Neill, Eileen M., M.B., 1926(I).
Orden, Joseph, M.B., Ch.B., 1923(S).
O'Reilly, Myles W., M.D., 1880(E).
Osbourne, Arthur B., L.M.S.S.A., 1925(E).
Oserovitz, Abraham, M.B., 1925(E).
O'Sullivan, Eileen A., M.B., 1925(I).
O'Sullivan, Joseph E., M.B., 1913(I).
O'Sullivan, Peter F., M.B., 1922(I).
O'Toole (Mrs.), Annie (formerly Cullen), M.B., 1924(I).
Owen, Charles A., F.R.C.S., 1889(E).

Pandya, Devi D., L.R.C.P. & S., 1901(E).
Panikker, Aerath N. N., M.R.C.S., 1919(S).
Paranjape, Ramchandra G., L.R.C.P. & S., 1929(E).
Parbury, Frederic D., M.R.C.S., 1902(E).
Park, James, M.B., 1915(I).
Parkinson, Malcolm, M.B., C.M., 1892(S).
Paterson, William L., *M.C.*, L.R.C.P. & S., 1916(S).
Patterson, Herbert C., L.R.C.P. & S., 1924(I).
Payn, John R., M.B., Ch.B., 1919(S).
Pearse, Frank, M.R.C.S., 1884(E).
Pearson, David C., M.B., 1904(I).
Pedlow, Charlotte, M.B., 1918(I).
Petit, Joseph, L.R.C.P., 1871(I).
Philip, Baddelianage D. H., M.R.C.S., 1914(E).
Phillips, Lionel L., M.R.C.S., 1907(E).
Phipps, George C., L.R.C.P. & S., 1924(I).
Pierce, Michael J., L.R.C.P. & S., 1908(I).
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Priest, James D., *M.B.E.*, M.R.C.S., 1879(E).
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Race, Edmund, M.B., 1893(E).
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Rand, Richard F., M.D., 1882(S).
Rankin, Reginald J., M.R.C.S., 1925(E).

Rao, Srikantia S., M.B., 1910(E).
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Reid, John B., M.B., 1930(E).
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Ricketts, Charles A., M.D., 1902(E).
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Roberts, Lincoln W., L.S.A., 1905(E).
Roberts, Llewelyn, L.R.C.P. & S., 1890(E).
Robertson, Susie A., M.B., Ch.B., 1917(S).
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Robinson, Victor, M.B., 1922(I).
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Roddy, Patrick J., L.R.C.P. & S., 1921(I)
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Ryan, Ellen M., M.B., 1925(I).
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Sheehy, William H. P., M.R.C.S., 1874(E).
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Stephen, Leslie D., M.B., Ch.B., 1909(S).
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ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE

THE Old Students' Dinner, held as usual in the Great Hall of St. Bartholomew's Hospital, provided an opportunity for enlisting public support for the development of the Medical College on the site of the Merchant Taylors' school in Charterhouse-square.[1] The dinner took place on Oct. 2nd, Lord Horder presiding, and the Prime Minister was the guest of honour. The Prince of Wales sent the following message which was read by the chairman :—

"Not only as president of St. Bartholomew's Hospital, but as a 'perpetual student' of the Medical College, I send my best wishes to all present at to-night's dinner. I welcome the decision to take advantage of the opportunity of moving to the site of Merchant Taylors' School, thus providing for the needs of the college, while at the same time vacating space which will be required for the extension of the hospital. I am glad to hear of the amount already raised towards the cost of the new college buildings, and wish all success to the present appeal. I hope that it will not be long before the students are settled in the residence that is to be provided for them, and I feel confident that the college, in its new home, will continue to play the great part for which, as the largest medical school in England, it is distinguished in the fields of medical education and research."

THE NEW DEVELOPMENTS

The Prime Minister, in proposing the toast of The Medical College, spoke of its history. He was one of those who worshipped old things of great repute. Everybody associated with the institution had good cause to be proud of it. Referring to the chairman, he said that it was the duty of the Minister responsible to suggest no honour for those who had not previously honoured themselves. Lord Horder had won his title by his attainments. This was a time when the medical profession had to go ahead. The fine old village doctors were a wonderful lot of men, but science and medicine were extending their field and their problems every day, and medical education had to keep pace. A new outlook was required, and he was extremely glad that St. Bartholomew's had embarked upon its venture of purchasing the site of the old Merchant Taylors' school, and hoped with all his heart that it would succeed.

Mr. W. Girling Ball, dean of the Medical College, said that the maximum number of students who could be admitted to the college in any one year was 130. During the last three years the maximum had been reached, so that at the present time there were something like 800 students annually within the hospital walls. Some 86 per cent. of these students were reading for university degrees; the remainder were mostly seeking the diplomas of the Conjoint Board, a large proportion of them being colonial students belonging to universities whose preliminary examinations were not recognised by universities in this country. The student who had trained himself to this standard had the right to demand a high medical education. To meet his needs the Merchant Taylors' school site had been acquired, and its acquisition marked a new era in the history of the Medical College of St. Bartholomew's Hospital. Its beginnings had been small, a single room and a museum having been granted by the governors of the hospital for the purpose of teaching. Fifty years later a new school was built, and now further expansion was urgently needed, not only to free the land on which the school now stands for the further development of the hospital, but also to meet the modern requirements of medical education. So rapid had been the progress of medical science, and so complicated had become the methods of diagnosis and treatment of the patients, that the teachers of the preclinical studies had had to alter materially their courses of teaching so as to make a really sound scientific basis for the students' clinical education. The Merchant Taylors' school site was the only area available in the close proximity of the hospital to serve the purpose. Whereas a year ago not one penny of the money required for its purchase was to hand, now something like £70,000 towards the £130,000 required was secured. The decision had had to be taken promptly or the opportunity lost. The Merchant Taylors' Company had been most sympathetic and helpful in the matter, and had allowed the Medical College to take possession for a certain sum of money and had lent the remainder on mortgage. The staff of the hospital had contributed themselves £13,000, and other Bart.'s men had raised the figure to something like £26,000. This was significant, since it proved that those chiefly concerned had this matter very much at heart, and gave them a right to approach the general public for further help. He particularly wished to thank the secretaries in various counties of the kingdom who had vied with each other to raise the largest subscriptions from Bart.'s men, and the medical officers of the Services who had raised £580. The University of London had already contributed £5000 to the fund. He also wished to thank the Corporation of the City of London and some of the city companies—especially the Mercers—and various other donors who had helped to swell the fund. The site had now to be developed. The first object was so to equip the present buildings that before the end of 1934 the building which now housed the physiology and physics departments could be released for sale. In order to carry out the full scheme of reconstruction £25,000 was required. The dean appealed to the public to enable the deficit of the purchase price to be paid off, and also to raise a sum of money for carrying out the necessary reconstruction, which would maintain the traditions of the great hospital of St. Bartholomew's as the first teaching hospital in this country, and as a great national and imperial possession.

Mr. Reginald Vick proposed The Guests in happy vein, emphasising Lord Wakefield's well-known generosity in supporting scientific objects, and drawing attention to the teaching now available for students in L.C.C. hospitals. Lord Mottistone promised to enlist the help of his friends in the Isle of Wight and the county of Hampshire. Sir George Newman expressed his conviction that the step taken was a wise one, and gave the assurance of his hearty support.

Lord Horder, responding to Dr. Geoffrey Evans's admirable speech proposing his health, said that Lord Wakefield had given £1000 to the fund, Sir Alexander Grant had promised £100 a year for seven years, and longer if Lord Horder could keep him alive longer; and he had received £1000 from a grateful patient.

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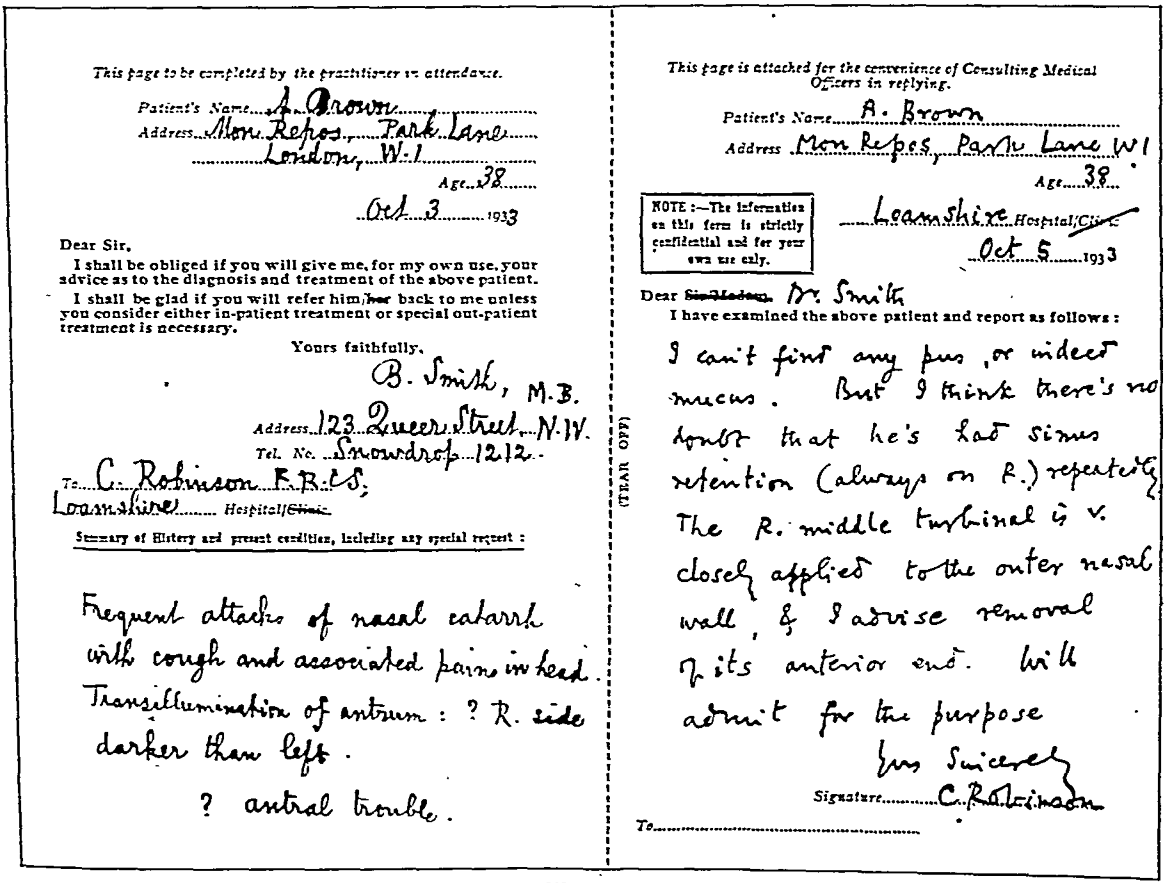
[1] See THE LANCET, 1932, ii., 646.

OUT-PATIENT DEPARTMENTS

COÖPERATION WITH PRACTITIONERS

In our first issue of this year we summarised a report by the King's Fund out-patients' committee. One of the conclusions reached was that hospital out-patient departments are treating minor cases that can be dealt with elsewhere—a state of affairs which on the one hand prevents efficiency of the departments, and on the other hand is a source of grievance to private practitioners. The obvious remedy for both complaints is better coördination between hospitals and the practitioners, and the committee warmly supported the movement towards a more consultative use of out-patient departments. It was not prepared to forbid admission to any patient who did not come in as an emergency or bearing a doctor's letter, but it urged all hospitals to discourage attendances, after the first, if the patient could possibly be treated by his private doctor.



This page to be completed by the practitioner in attendance.

Patient's Name A. Brown
Address Mon Repos, Park Lane
London, W.1
Age 38
Oct 3 1933

Dear Sir,

I shall be obliged if you will give me, for my own use, your advice as to the diagnosis and treatment of the above patient.

I shall be glad if you will refer him/~~her~~ back to me unless you consider either in-patient treatment or special out-patient treatment is necessary.

Yours faithfully,
B. Smith, M.B.
Address 123 Queer Street N.W.
Tel. No. Snowdrop 1212

To C. Robinson F.R.C.S.
Loamshire Hospital/~~Clinic~~

Summary of History and present condition, including any special request :

Frequent attacks of nasal catarrh with cough and associated pains in head. Transillumination of antrum : ? R. side darker than left.

? antral trouble.

(TEAR OFF)

This page is attached for the convenience of Consulting Medical Officers in replying.

Patient's Name A. Brown
Address Mon Repos, Park Lane W1
Age 38

NOTE :—The information on this form is strictly confidential and for your own use only.

Loamshire Hospital/~~Clinic~~
Oct 5 1933

Dear ~~Sir/Madam~~ Dr. Smith

I have examined the above patient and report as follows :

I can't find any pus, or indeed mucus. But I think there's no doubt that he's had sinus retention (always on R.) repeatedly. The R. middle turbinal is v. closely applied to the outer nasal wall, & I advise removal of its anterior end. Will admit for the purpose

Yrs Sincerely
Signature C. Robinson

To

The form issued by the London Panel Committee, filled in with imaginary case notes to indicate what space is available for the purpose. The actual size of the form is about 9 in. by 6¾ in.

Two important steps have now been taken to advance this coördination. The out-patients' arrangements committee, which was appointed to help in carrying out the recommendations of the committee of inquiry, is this week circulating a letter, signed by Sir John Rose Bradford, summarising the position and enclosing two documents which should be of great practical value. The Fund has not found it practicable to send a circular letter to doctors outside its area, but the documents will be supplied free to any practitioner who applies for them to the King Edward's Hospital Fund for London, at G.P.O. Box 465A, 10, Old Jewry, E.C.2.

The British Medical Association and the London panel committee had both been concerned with the problem of the out-patient before the King's Fund committee reported, and both had prepared a model form of introductory letter to be brought by an out-patient from his general practitioner. The Fund has adopted both these forms, and a copy of each is being sent out with the circular letter. The two do not differ in any material particular, and both can be obtained at 1s. a hundred from the publishing bodies (British Medical Association House, Tavistock-square, W.C.1, and Panel Committee for the County of London, 17, Russell-square, W.C.1).

The form selected by the panel committee is here reproduced. The second sentence in the doctor's letter is intended to signify the willingness of the panel practitioner to continue the treatment of his insured patients unless the consultant wishes to retain them. The sheet is perforated so that the consultant can tear off his reply half; some consultants prefer, of course, to write their own private letters, but the form should in any case be useful for making notes at the time of seeing the patient. One of the suggestions of the out-patients' committee was that shorthand and typing facilities should be provided by the hospital; it may be observed, however, that the form provided would not be welcomed by a typist, for it is narrow and very little information could be squeezed on to it in type-script.

The second service which the King's Fund committee has performed is the preparation of a complete list of out-patient attendances at the various London hospitals. Most hospitals issue their own time-tables, but the format varies from a post-card to a foolscap sheet, and some of them are not suitable for the practitioner's use. The Fund has now collected the times of the various hospital out-patient sessions in a convenient eight-page booklet, which exactly fits into the telephone directory, or can be folded in half and kept in a book of ordinary octavo size. The hospitals are arranged in alphabetical order, and after each there is a small space in which the doctor can write any notes of his own, such as the name and times of attendance of a particular consultant. This publication should be really helpful. Much hardship to the patient is saved if he can be told the precise time at which he should attend the hospital in order to have a chance of being seen in the proper department.

PANEL AND CONTRACT PRACTICE

Prescribing and Dispensing

THE second edition of the National Formulary came into operation on Oct. 1st, and the first edition, published in 1929, is now obsolete and must not be used. The new edition contains additions, deletions, changes of title, and changes of composition in conformity with the 1932 issue of the British Pharmacopœia, and also other changes of composition. The additions include 7 "drop" preparations, 4 lotions, and 27 mixtures; the omissions, 9 mixtures and 7 pills. Thirty-two preparations have been given a different name, often a change from B.P.C. to B.P. Furthermore, 64 preparations have had their compositions changed in order to comply with the requirements of the B.P. 1932. The book is issued by the British Medical Association for the National Insurance Defence Trust, being compiled by the Insurance Acts Committee. As before, notes on prescribing are given under three headings: (1) frequency of prescribing; (2) cost of ingredients prescribed; and (3) the dispensing fee involved. These notes touch on many important points which may easily be forgotten at the crisis of an illness, and special attention should perhaps be drawn to the paragraph on special preparations.

To avoid loss through having odd quantities of proprietary preparations left on their hands, chemists are in certain circumstances entitled to receive payment for a quantity larger than that stated on the prescription. For example, if 12 tablets of a proprietary article are ordered, but the smallest packet obtainable by the chemist is 25, he may supply and be paid for the 25. In this way the cost of proprietary prescribing is much increased. Prescriptions marked "urgent" carry double the dispensing fee that they would otherwise have, but in this connexion the public and the profession have definite ground of complaint about the dispensing service provided after hours in most areas. There seems to be no point in marking a prescription "urgent" if no chemist is ever available to make it up after hours. In the early days of the Act most chemists lived above or in touch with their shops, and it was possible to get medicines supplied outside the ordinary hours; but to-day it is quite possible to go the round of every chemist shop in a town and get no reply from any of them. This is an unsatisfactory state of affairs; on the other hand, in some areas there would be many nights when a single chemist on duty for the locality until, say, 10.30 P.M., would find very little to do.

The chairman of the pharmaceutical service subcommittee for London gave an assurance to a member of the main committee at its last meeting that he will look into the drug-testing scheme as at present administered. Perhaps he will also consider the *peregrinations* of an "urgent" prescription in the metropolis after 8 P.M.

Insurance Acts Committee

Tuberculosis and the Regional Medical Officer.—Among important matters discussed by the Insurance Acts Committee on Sept. 21st, at the first meeting of the new session, was a suggestion that approved societies should refer cases of tuberculosis direct to the tuberculosis officers instead of to the regional medical officers. The committee had been inclined to agree to this suggestion, but the Minister of Health said he had no power to put these extra duties on tuberculosis officers without the agreement of the local authorities. He also stated that whenever a tuberculous person was found by the regional medical officer to be fit for work the tuberculosis officer was asked for a report before the regional officer's own report was sent in.

Pregnancy.—An investigation by the organising medical secretary for London has shown that the practice of approved societies in dealing with claims for sickness benefit from pregnant women varies to an extraordinary degree. Some allow no sickness benefit whatever (in uncomplicated cases); others permit six weeks prenatal benefit. One society raises no objection if the patient is considered incapable by reason of pregnancy at the end of the eighth month; another urges that sickness benefit should be commuted and a substantial benefit substituted. The latest figures for this society, which refers every case of pregnancy, show that seven out of every ten certified as pregnant are found capable of work. There remains also to be considered the question whether such a woman is capable of doing "housework." A subcommittee was appointed to consider this subject and report in November. There was a suggestion, too, that a conference should be arranged with approved societies to try to make some agreed arrangement.

Public Medical Services.—An application for the loan of £1000 from the National Health Defence Trust to further publicity for the London Public Medical Service was considered. The service, it was stated, is steadily growing; there are about 17,000 subscribers and between 700 and 800 doctors; and it is run in conformity with the model scheme. It was decided to ascertain more exactly the British Medical Association's attitude to loans for public medical services.

The question of publicity for medical services was considered at the Representative Meeting in Dublin, where it was agreed that where necessary the Association should advance money to help in launching them. A difficulty of the same kind has arisen in Birmingham, where a scheme for a public medical service was launched a few months ago. The scheme is said to be hampered by that phase of the medical code which discourages anything that may be regarded as advertising, and it is said that few of those who should profit by it know of its existence. The slogan of the service is "Ask your own doctor," and so far some 250 practitioners in Birmingham have joined it—most of them practising in the industrial area of the city.

A similar scheme for middle-class people is likely to be started next month in the Manchester area, the proposed charges covering the benefits being 36*s*.

per year for single persons, 46s. for married couples, and 56s. for married couples with one or more dependants under 16. Here the advice given is to be "Choose your own doctor and specialist and your own institution"; from which it will be gathered that the intention is to include every sort of service, whether at home, in the consulting-room, or in hospital.

CORRESPONDENCE

SHOCK-PROOF X RAY INSTALLATIONS

To the Editor of THE LANCET

SIR,—In a leading article in the current number of THE LANCET you have stressed the two most important points in the avoidance of X ray fatalities, notably (1) the personal factor and (2) the urgent need for the greater use of shock-proof apparatus.

As the golfer aims at his swing becoming automatic, the expert radiologist and his good technical assistant, the radiographer, have the same objective. The final glance by the expert, when all is ready for his work, is automatic, but nevertheless of vital importance. It would be impossible, however, for the radiologist in a busy hospital to be present at every X ray examination in the wards, and it was this fact among others which led some of us long ago to found the Society of Radiographers. The excellent work of members of this society have more than justified the venture. While their training naturally does not justify them in treading the thorny ground of diagnosis, they are expert in the technical side of the work, and the relationship between them and the radiologist is a very happy one.

As you say, the ideal to be aimed at is the more general use of shock-proof apparatus. British manufacturers have been engaged for some time in investigating the possibilities of making shock-proof (dare I say "fool-proof"?) apparatus. To-day this is obtainable, and it is quite possible to make existing apparatus similarly safe. No wearing of rubber shoes or other things of the kind can obviate the result of contact with the high tension side of the apparatus. Indeed, were I to have to choose, I should prefer to come in contact with high tension leads without wearing rubber soles; in the one case I might have a sporting chance, in the other certainly none.

At the forthcoming annual meeting of the British Institute of Radiology, in December next, I understand that there is to be a special feature in the exhibition of shock-proof apparatus by British manufacturers. It is clear that to-day anyone who is thinking of installing portable apparatus will be wise if he decides upon having it shock-proof.

It is perfectly true that fatalities such as the recent one are of extreme rarity, but the potential danger is always there, and it would be foolish to shut one's eyes to this fact.—I am, Sir, yours faithfully,

London, W., Oct. 2nd, 1933. STANLEY MELVILLE.

ANGIONEUROTIC ŒDEMA

To the Editor of THE LANCET

SIR,—Dr. Lennon's paper in your last issue induces me to mention a case I had about ten years ago.

The patient was a retired medical man, aged 62, and had suffered from angioneurotic œdema since 1916. There was no family history of allergy. He had first swellings of the lips, cheeks, tongue, and uvula. He was vaccinated with *Staphylococcus albus* and *aureus*, and with streptococci, but this did no good. He sometimes developed a carbuncle on his cheek or neck, which was always followed by swellings in the neighbourhood in about seven to nine days. Since the angioneurotic œdema came on he has had acid gastric attacks, lasting from 24 to 36 hours. When he came to me he had been lately suffering from œdema of the tip of the tongue, the heel, and the instep. The œdema lasted from a few hours to 36 hours. I ordered him peptone injections, of which he had 16. This was in May, and from this time until December he was quite free, and thought himself cured. The attacks, however, returned, and subsequent injections did him little good.

He saw me from time to time, with but little change in his symptoms, but last spring he came again saying he had got great relief by taking 3 drachms of sodium citrate. This stopped the attacks, especially if taken on an empty stomach. The œdema always cleared off within an hour. If not, he took a second dose, which almost immediately brought relief. It may be that the acid gastric attack made him think of trying this remedy. I am, Sir, yours faithfully,

Harley-street, W., Sept. 30th, 1933. A. G. AULD.

KETOGENIC DIET IN URINARY INFECTIONS

To the Editor of THE LANCET

SIR,—I have read Drs. Fuller and Colebrook's article in to-day's number of THE LANCET with interest and admiration. One point, the use of fresh lemons for drinks, which they recommend, I should like to mention. If these are used extensively they increase the alkaline excretion in the urine to such an extent as to make even a urine with a heavy ketone excretion definitely alkaline. I was once puzzled by finding a strongly alkaline urine (pH 8·2) in a severe diabetic with a heavy ketone excretion. This was proved to be directly due to fresh lemon drinks. In cases of urinary infections treated by ketogenic diets, not only ketonuria but also a strongly acid urine seem desirable, so that a warning as regards unlimited lemon drinks is not out of place.—I am, Sir, yours faithfully,

R. D. LAWRENCE.

Harley-street, W.1, Sept. 30th, 1933.

THE INDIAN MEDICAL SERVICE

To the Editor of THE LANCET

SIR,—In the Students' Number of THE LANCET, dated August 26th, there appears a "Memorandum regarding appointments to and conditions of Service in His Majesty's Indian Medical Service," issued by the Military Department of the Secretary of State for India. This shows that recruitment for a Service hitherto famed for work in the tropics, and for entry into which keenness in competition was for many years more pronounced than in the Naval and Royal Army Medical Corps Services, is now conducted under the auspices of a selection committee. *Pour encourager les autres*, it has been affirmed that a highly placed medical official has expressed satisfaction with the "material" forthcoming. It is, however, probable that a more judicious view of conditions has been pronounced by Mr. Butler (Under Secretary for India), as reported in THE LANCET of July 22nd, page 214, who "said that there had been lately a definite improvement in the recruiting of Government medical officers so far as numbers were concerned, and on the whole the quality of the candidates had also improved." In the Act of 1924, which amended the Government of India Act of 1919, considerable advances towards self-government in India were made, which do not seem to have found favour with British medical men, as shown by the India Army List for April, 1933; here it is found that the "material" which gave satisfaction to the medical official was from 1925 to 1931 entirely Asiatic.

The memorandum embodies short service gratuities which may prove tempting to men desirous of capital for purchase of a practice, yet oblivious to the fact that years spent in fighting tropical diseases need not conduce to longevity nor to knowledge of conditions which beset public and family life which, in this country, is essential for securing the confidence of private patients and public bodies. But it may well be that the short-service gratuity has no attraction for the recruit, and that he accepts conditions "for better or worse" until he has earned a pension on retirement. Before, however, making this resolve, it is well the candidate should review changes in officialdom which have taken place in India, and those of a still more undesirable nature contemplated under the White Paper policy of the present Government—*cavendo tutus.* Within 23 years complete Indianisation of the army is projected; within five years one-half of the officers of the police will be Indians. The varied functions of the Indian Civil Service will also be largely handed over to Indians. With the best of goodwill on both sides during coöperation in official life, differences in racial ethics will hereafter demand special circumspection. But granted harmony reigns and the right to pensions has been duly earned, what prospect has the present-day candidate of realising it? None—if the Congress party comes into power by the absurd election method proposed—and, again, none if the callous assertion—amply negatived by official records—made on March 7th, 1932, in the House of Commons by the Secretary of State for India, to the effect that the pensions of the Indian Medical Service and the "Indian Services" generally "are not guaranteed by the British Government" is allowed to stand undisputed.

I am, Sir, yours faithfully,

W. G. KING, C.I.E.,
Colonel, I.M.S. (ret.).

Hendon, Oct. 2nd, 1933.

MEDICAL NEWS

HOSPITAL DINNERS

St. Bartholomew's Hospital

The old students' dinner provided the occasion for the inauguration of a public appeal for funds for the development of the medical college, to which we draw attention on p. 836.

St. Thomas's Hospital

Dr. C. R. Box, presiding over the annual dinner on Sept. 29th, said that 200 years ago the governors and officers of the hospital held a dinner at the end of which a collection was taken to defray the expenses of the ensuing year. Sir Arthur Stanley, however, remarked that history was not going to repeat itself on this occasion. The £20,000 given anonymously in 1912 for rebuilding the out-patient department had grown to £53,000 by the time it was needed, and only another £10,000 would be required to complete the work next year. The reconditioning of the ward blocks was also more than half finished, and would cost £30,000. There was no money at all, but the hospital would not be where it was if the governors had ever stopped to think about money. He did not see why this generation, which had borne the burden and the heat of the day, should deny itself anything for the sake of generations yet unborn.—Prof. L. S. Dudgeon, as dean, began his speech with a reference to the loss of "two of the greatest men at St. Thomas's in my time," John Herbert Fisher and Sir Percy Sargent. Passing to the work of the medical school, he said that the year had seen it linked up for the first time with a municipal hospital, namely, Lambeth. The time had come, he thought, when the medical schools should coöperate; if medical education in London was to occupy its proper place it was essential that they should join together in twos or groups. On the death of Sir Percy Sargent, he continued, Mr. B. C. Maybury had been appointed full surgeon and Mr. R. H. Boggon assistant surgeon. Mr. Max Page had accepted the part-time post of director of the surgical unit, with Mr. R. H. O. B. Robinson as deputy director. Dr. H. K. Goadby was now deputy director of the medical unit. In athletics St. Thomas's had won all three events in rowing, the fencing, golf, hockey, tennis, and cricket. In the athletic sports "we failed: Bart.'s won"; but the chief events were won by St. Thomas's. At Association football the hospital was also successful.—Prof. W. Langdon Brown and Mr. W. Girling Ball, dean of St. Bartholomew's, replied for the guests. Mr. Girling Ball said he thought that rivalry in sport was becoming rather tiresome; he preferred "friendly matches" between the schools. He was sure the time had come when Bart.'s and St. Thomas's should join up; certainly they were in more friendly relations than ever before.—Sir Cuthbert Wallace, proposing the chairman's heath, recalled how Dr. Box's steady and persistent work had built up the children's department at the hospital.

Charing Cross Hospital

The annual dinner was held this year at the Café Royal and was well attended. Dr. William Hunter, who took the chair, proposed the toast of the Hospital and the Medical School, now at the beginning of the centenary year of their foundation. Since he had last presided, he said, the hospital had sustained the loss of such great teachers as Mitchell Bruce, Sir Herbert Waterhouse, and Sir James Galloway, and, during the last year, of Mr. H. S. Clogg. He congratulated Dr. Gordon Holmes on becoming a Fellow of the Royal Society, and mentioned the appointment of Dr. A. B. Rosher to the London County Council. The hospital and school had seemed an ambitious project when Golding founded them, but nearly all the original aims of the dual foundation had now been attained, and he congratulated the staff on the prosperity of both undertakings. Mr. Eric Crooke, the dean of the school, in reply, referred to the little room with the bow window (now a part of the engineers' department of the hospital) in which Huxley used to work, and thought that it would appropriately mark the centenary year of the hospital if a tablet were placed in that room in commemoration of Huxley. When Golding founded the hospital it was unique in having a medical school as an integral part of its system. This year the entry of students to the school had been larger than ever before, and had now reached the maximum number for which accommodation could be found. Mr. E. D. D. Davis, in proposing the toast of the Chairman, told how Dr. Hunter had been responsible for annexing a public passage-way and adding it to the hospital museum. He had also introduced the use of formalin for preserving the natural colours of museum specimens. In the wards, he said, Hunter was a stimulating teacher, but sometimes his eye would light on a case of pernicious anæmia, and hurrying to the bedside he would ask the patient to put out his tongue. "There you have it—there you have the whole history!" he would say, and sink into a reverie; teaching was at an end for the afternoon. His house physicians learned to hide their pernicious anæmia cases behind screens. Hunter also wrote a history of the school and hospital, and had an idea of making the school a part of the University of London. To-day they were on a wave of success, and the small medical school was undoubtedly coming into its own. In response, Dr. Hunter said that Huxley had begun his life's work in the room with the bow window; in the evenings his head, leaning over the microscope, would be silhouetted on the panes, and the window came to be known as "The Sign of the Head and Microscope." Dr. S. Taylor Harris gave a pleasantly intimate entertainment, singing a programme of favourite songs, from which this conservative gathering never allows him to deviate, while he called Mr. John Goss to complete an old and ever amusing alliance.

St. Mary's Hospital

The dinner at the Trocadero Restaurant on Sept. 30th, under the chairmanship of Dr. Reginald Miller, was something of a gala. It was held on Saturday evening in the middle of a popular post-graduate course. A novelty was the proposal of the chairman as the first toast after the loyal toasts had been honoured. It gave Dr. P. Montague Smith the opportunity for reminiscences of 22 years ago, when he found evidence that many of his fellow members of the school had mistaken their vocation. He was very willing to admit that Dr. Reginald Miller, who on Caley's retirement in 1911 was promoted from supernumerary to full physician, was following in the tradition of Poynton, Carey Coombs, and David Lees. Dr. Miller, after a graceful and humorous acknowledgment of his own reception, welcomed the guests of the evening, the Vice-Chancellor of London University and the Mayor of Paddington; they were always glad to have with them Colonel H. E. Verey, chairman of the hospital board. Reminding his hearers that there is something that makes for happiness on Saturday nights, he added that to the present-day student in the new school, with its swimming bath and squash court, all days might seem like Saturdays. He concluded with a tribute to the new school as almost a "one-man show," for it owed to Dr. C. M. Wilson the inspiration of its conception, the drive and grit to see it through, and an invincible faith in its future. Dr. Wilson remarked that the completion of the school made it unnecessary for him to deliver the speech which he had already made 13 times, and the freedom allowed him also to be reminiscent. He had held office for 13 years, which had seen great changes. The entry in those early years after the war had been in the thirties. This year 90 students had been accepted, while a considerable number who would have been taken in the ordinary course of events had been reluctantly refused admission. The school was watching and would continue to watch very carefully the relation of the number of students to the number of beds in the hospital. The financial position of the school had been transformed. A sum of nearly a quarter of a million pounds had been spent on the buildings without infringing on the sound financial position of the school. St. Mary's had for more than a decade led the way in branching out into new ventures. In particular he instanced the affiliation with the Paddington Hospital many years before the London County Council took over the infirmaries, and the post-graduate course which attracted every year an average attendance of 200. The new buildings would be formally opened in the near future.

Westminster Hospital Dinner

Mr. Eric Worsley Gandy presided at a dinner of past and present students of Westminster Hospital, held at Grosvenor House on Sept. 30th. After the health of His Majesty the King had been honoured the chairman related the events of the past year. The school was within three months of its centenary, and now had 128 students. Examination results had been up to a good standard, and an outstanding feature was the school's success in reaching the Rugby Cup semi-finals. The financial position of the hospital had considerably improved by an unexpected legacy of £30,000. In the last 20 years the annual number of in-patients had nearly doubled, and the number of out-patients had increased from 60,577 in the former year to 139,000. He quoted Sir Cooper Perry as having said, when acting as a member of a deputation of the King Edward's Fund, that he knew of no hospital that had made more progress in ten years. All rumours of an amalgamation with St. George's Hospital were, said Mr. Gandy, absolutely unfounded. He described eloquently the new buildings transforming the district round Horseferry-road, and affirmed the autonomy and stability of the Westminster Hospital.

Dr. A. E. Parker, in brief reply, said that his first lesson on arriving at the hospital was to cultivate the art of patience, and his first impression was the smell of cooking and iodoform, then prevalent but now extinct, but he regretted the passing of the old and very unreliable hydraulic lift. A bright future, he said, lay before the hospital.

Mr. J. B. Neal, also in reply, suggested that the hospital had grown—alarmingly. Every day dressers were turned out of the surgery to make room for patients. War had been blamed for many things, but one of its traces on the hospital had gone—the last woman student had qualified. Medical instruction had been superseded by medical education; clinical demonstrations were to be given all the time, replacing an imaginary text-book in the hands of the lecturer.

Dr. Adolphe Abrahams, proposing the health of the visitors, said that the proposer ought to be allowed to select his own visitors: the result would be interesting. He envied the posts of the medical editors present, but failing their jobs he could do very well, he said, with the *Times*. Sir Squire Sprigge perhaps had a disappointment: that he had not the speaker's position of physician to out-patients at the Westminster. Dr. N. G. Horner was not the kind of person whom the editor of the *British Medical Journal* should look like—fierce, with beetling brows—but he could forge the anchor as well as spin the gossamer. He had been the second best editor that the *Journal* of St. Bartholomew's Hospital had ever had—he would not mention the name of the best.

Sir Squire Sprigge interpreted his invitation and that of Dr. Horner as a generous recognition of the inexactly defined position of medical journalism as an integral part of the profession. One of a medical editor's problems nowadays was, he said, to understand the actions and reactions which determined the attitude of the public to the profession. The public was apt to assume that the doctor was too learned to attend to common sense, and that if laymen had control of the nation's health things would go better. It was unthinkable that those who had been intensively educated in the essentials of medicine should be superseded by excited laymen, but this sometimes seemed to be a danger. The work of a medical editor was like that of a ringmaster in a circus; he did not perform himself but chose the performers, and to some extent controlled their tricks. His most pleasant duty was coöperation with the men in all branches of the profession, without whose constant help and advice the journal could not be conducted.

Dr. N. G. Horner said that he had many friends present and was not a stranger where he was a guest. Immediately on qualification he had become a member of the resident staff, and looked back on many happy memories. He had also a prenatal connexion, as his father had been resident obstetric officer.

Mr. Arthur Evans proposed the health of the chairman, giving a humorous description of modern anæsthetic practice when the chairman, in reply, bade farewell to old friends upon his imminent resignation from the board of the hospital, but pointed out other directions in which his connexion with them would be maintained.

St. George's Hospital

The annual dinner of the School took place at Claridge's Hotel, Brook-street, on Monday, Oct. 2nd, when a large gathering was presided over by Dr. Henry Robinson, J.P., L.C.C., who was supported by many members of the school and hospital staff. The toast of "The King" having been pledged, the chairman, in submitting that of the Hospital and Medical School, said the present had been a special year because of the celebration of the bicentenary, in honour of which a very enjoyable gathering took place in the summer. Of the question which had been agitating so many minds lately—that of the removal of the hospital from Hyde Park Corner and its rebuilding on another site—he would say that it was a burning one even in the day when he was actively connected with the medical school, for then all kinds of plans were drawn up, and even a water-colour drawing of a proposed new elevation was executed; now, he added, the outworn condition of the building rendered the situation even more urgent, one indeed that must be practically tackled. The medical school, he was able to report, was in a flourishing condition, maintaining its fine traditions, while Dr. J. Blomfield's book on the institution should be read, for its historic interest, by all St. George's men. He would refer, he said, to a very interesting account in its pages of the epidemic of cholera which visited London in the 'fifties, when a large number of cases were received into the hospital, and towards the end of the epidemic Dr. Reginald Thompson, the registrar, caught the disease. Thompson assiduously took note of all his own symptoms and his progress, and out of his experience predicted the day of his crisis correctly and recovered. Dr. Robinson closed with a sympathetic reference to the late Sir William Bennett, under whom he had served. Bennett, he said, seldom seemed to take his house surgeons into his confidence, but on one occasion, after an illness of several weeks, he received visits during his convalescence, and revealed a warm and confidential side of his character. During these visits he detailed many episodes in his busy career, one of which might be related because of its moral. Sir William, he said, was one of the earliest of the enthusiastic converts to Listerism, and it fell to his lot to practise excision of a tuberculous elbow for a scion of the aristocracy. Bennett plumed himself on the fact that as this operation had then only been done by a few people the event would do him a lot of good, especially as he was certain he would avoid suppuration. But, to his horror, the wound suppurated profusely for weeks, and the surgeon concluded that this would seriously damage his private practice and even career. After some weeks of daily dressings the child convalesced, and eventually made a satisfactory recovery. Then he found that the influential parents had been saying most gratifying things about him, such as that it was surprising what an anount of corruption was discovered in the boy's system, and what a good thing it had now been eradicated, and how great the surgeon was. The moral, the speaker declared, was that a doctor often got credit to which he was not entitled, and blamed where praise was his due.

Dr. Anthony Feiling, dean, responding, said that in view of the present world depression this was not a favourable time to appeal to the general public for a large sum of money, and that accounted for the fact that the bicentenary celebration had been a domestic one. A fund, however, was inaugurated, and a wireless appeal made, and resulted in the collection of £5000; St. George's men subscribed £565, and nurses of the hospital £380, while the proceeds of the sale of Dr. Blomfield's book were being given to the fund. The work of the medical school had been continued successfully, and students had carried off several big prizes. A post-graduate course had been instituted for old students of the hospital, largely as the result of a stimulating address given by Dr. Le Fleming; some 30 practitioners were attending, and it was a course full of promise. The entry of students for the current session was entirely satisfactory. Speaking on the removal of the hospital to another site, he emphasised the great need for this as soon as times were better; on the present site it was impossible to expand, and even contraction might set in, and, moreover, the hospital buildings were not in too good a condition. To a new member of the staff, Mr. M. F. Nicholls, he extended a warm welcome, and concluded with congratulations to Sir Stewart Duke-Elder on his knighthood.

Mr. M. I. A. Hunter having also responded, the toast of "The Chairman" was submitted by Mr. Claude Frankau, who referred to the many activities of Dr. Robinson, his services in the South African war and the European war, and his devotion to public affairs. The chairman briefly responded.

Middlesex Hospital

In describing the remarkable development of the hospital during recent years, Dr. Henry MacCormac, chairman at the annual dinner, said that Mr. W. H. Collins had lately given £25,000 for a new department of radiodiagnosis. This is to be in charge of Dr. H. K. Graham Hodgson, who was present as a guest. When it was built, Dr. MacCormac said, the hospital was the smallest in London; before the war it was eighth; now it was third. This meant progress; but it was, he thought, the tradition of service that bound Middlesex men together.—Mr. S. A. Courtauld, chairman of the medical school council, expressed the great satisfaction of the council at the reputation, national and international, which the various institutes of the hospital are achieving.—Dr. Izod Bennett, the dean, said that last year the school had had a record entry of 68 new students; this year it was 90—partly perhaps because the depression had led business men to put their sons into "that most lucrative profession of which we are members." He believed that the work being done in some of the laboratories was soon going to produce something very wonderful indeed.—Dr. H. G. Bywaters, senior Broderip scholar, said that the medical student now had no time to grouse: "the rate is so rapid that murmurs cannot be heard." The authorities insistently encouraged katabolism rather than anabolism; this was reflected, for instance, in the fact that 1*d.* was charged for sitting at tables in the restaurant but nothing at all for sitting in the little cubicles downstairs.—Mr. A. E. Webb-Johnson, treasurer of the medical school, in a speech of graceful references to the guests, spoke of Sir Holburt Waring's persistent endeavour to make Bart.'s not only the oldest but the best hospital in London. "We at Middlesex know that he is attempting the impossible, but we admire the attempt." Sir Holburt, in his reply, looked forward to the time when the athletic representatives of London University schools would join together and compete, as conquerors, with other university teams. He thought it useless to try to reserve paying beds in the new wing "for the middle-classes" alone—they must be available for every class—and he hoped the new radiological department would include a department of biophysics.—Mr. Collins said that his gift was a token of gratitude for surgical help he had received, and if more money was needed to make it the best of its kind he would be there to foot the bill.—Dr. G. E. Beaumont was very amusing about the chairman, and Dr. MacCormac's health was drunk with enthusiasm.

The dinner was held at the Savoy Hotel on Tuesday evening.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the Faculty, held on Oct. 2nd, the following were admitted to the Fellowship:—

John William [illegible] John Fulton Christie, M.B.; Eric Gu[illegible] [illegible]iam Steele Watson Guthrie [illegible] [illegible]en Hunter, L.R.C.P. (Llanel[illegible] [illegible] and Frank Thomas Land. [illegible] Thorburn, M.B. (Hamilton).

Gresham College

Four lectures on the English hospital system will be delivered by Sir George Newman, chief medical officer to the Ministry of Health, at 6 P.M., from Monday, Oct. 9th, to Thursday, Oct. 12th, at Gresham College, Basinghall-street, London, E.C. 2.

Society of Medical Officers of Health

The annual general meeting of this society will be held at the house of the society, 1, Upper Montague-street, Russell-square, London, W.C., on Friday, Oct. 20th, at 5 P.M. Dr. Charles Porter will be installed as president of the society, and the subject of his presidential address will be "Presidents and Prophecies." The annual dinner of the society will be held at the Mayfair Hotel, Berkeley-street, London, W., on Thursday, Nov. 23rd, at 7.30 P.M. H.R.H. Princess Louise and Sir Hilton Young, Minister of Health, will be the guests of the evening. Further particulars may be had from the executive secretary of the society.

Fellowship of Medicine and Post-Graduate Medical Association

There will be an all-day course in cardiology for advanced students at the National Hospital for Diseases of the Heart, from Oct. 9th–21st. A week-end course in clinical surgery will be given at the Royal Albert Dock Hospital on Saturday and Sunday, Oct. 21st and 22nd. The course will occupy the whole of each day from 9.30 A.M. to 6.30 P.M. Forthcoming courses include a course in gynæcology at the Chelsea Hospital, Oct. 23rd to Nov. 4th; a course in neurology at the West End Hospital for Nervous Diseases; a week-end course in diseases of the chest at the Hospital for Consumption, Brompton; a course in ophthalmology at the Central London Ophthalmic Hospital; and a course in urology at St. Peter's Hospital for Stone. A panel of teachers giving clinic instruction is available throughout the year, and courses may be arranged for members and associates by the secretary of the Fellowship, 1, Wimpole-street, London, W.1.

University of London

Heath Clark Lectures.—At the London School of Hygiene and Tropical Medicine, Gower-street, London, W.C., on Wednesdays from Oct. 18th to Nov. 15th, at 5 P.M., Mr. Cyril Burt, D.Sc., professor of psychology in the University, will deliver a course of five lectures on the ormal and subnormal mind, some contributions of modern psychology to problems of social medicine. The chair will be taken at the first lecture by Dr. C. S. Myers, principal of the National Institute of Industrial Psychology. No ticket of admission to the lectures is necessary.

University of Durham

The inaugural address of the winter session at the University of Durham College of Medicine, Newcastle-upon-Tyne, will be given on Friday, Oct. 13th, at 4.15 P.M., by Sir Norman Walker, president of the General Medical Council.

University of Bristol

The Long Fox memorial lecture will be delivered by Mr. Cecil A. Joll on Tuesday, Nov. 7th, in the physiological lecture theatre of the University, at 5.30 P.M. Mr. Joll's subject will be recent advances in the ætiology, diagnosis, and treatment of cancer. The vice-chancellor will preside.

The Psychology of War

A lunch-hour address on War, Sadism, and Pacifism will be given by Dr. Edward Glover at 1.20 P.M. on Tuesday next, Oct. 10th, at Friends House, Euston-road, London, N.W. Dr. Glover's book on this subject was reviewed in our issue of July 22nd.

British Institute of Philosophy

The next meeting of this institute will be held at University College, Gower-street, London, W.C., on Tuesday, Oct. 17th, at 8.15 P.M., when Prof. E. A. Milne, Rouse Ball professor of mathematics in the University of Oxford, will speak on some points in the philosophy of physics, time, evolution, and creation. Tickets may be had from the director of studies at University Hall, 14, Gordon-square, London, W.C. 1.

Grocers' Company Scholarships

The next election for the scholarships which the Grocers' Company offers with the object of encouraging original research in sanitary science will take place in May, 1934. Each scholarship is worth £300 per annum, and an allowance is given for apparatus and other expenses in connexion with the work. The scholarships are tenable for one year, but are renewable for a second or third year. Applications must be sent before the end of April, 1934, to the clerk to the Company, Grocers' Hall, London, E.C.2.

Mental Treatment Act, 1930

Those medical practitioners whose approval for the purpose of signing recommendations under Sections 1 (3) and 5 (3) of the Mental Treatment Act, 1930, expires on Dec. 31st next, are being invited by the Board of Control to make application for renewal of the approval, and are being furnished with forms of application for this purpose. Any other practitioner who may desire to seek approval under the Mental Treatment Act can obtain a form of application on writing to the Board of Control, Caxton House West, Tothill-street, Westminster, S.W. 1.

Chadwick Lectures

The autumn programme of the Chadwick Trust opens with a lecture on the Port of London sanitary administration by Mr. P. W. Coombe at the house of the Royal Society of Arts, John-street, Adelphi, at 5.15 P.M., on Monday, Oct. 23rd. Dr. Percy Flemming will give the second lecture, which will range from the sanitary arrangements of the present day to those of mediæval monasteries. This will be delivered on Thursday, Nov. 2nd, at 26, Portland-place, London, W. The Malcolm Morris memorial lecture will be given on Nov. 14th by Dr. R. O. Moon, whose subject is housing and town planning in relation to public health. Other arrangements include a symposium on the one-pipe system of house drainage in theory and practice, and an address by Mr. J. H. Coste, F.I.C., on rural sanitation. Particulars may be had from the secretary of the Trust at 204, Abbey House, Westminster, S.W.

Surgical Instruments Manufacturers' Association

The annual dinner of this association will be held at the Criterion Restaurant, Piccadilly-circus, London, W. on Friday, Oct. 20th. The principal guest will be Sir William Wheeler.

London Hospital Medical College

On Thursday, Oct. 12th, at 4.30 P.M., Dr. Otto Leyton, physician to the London Hospital, will deliver the Schorstein memorial lecture in the anatomical theatre of the hospital. His subject will be Multiglandular Disease. The annual dinner will be held at the Trocadero Restaurant at 7.30 for 8 P.M. on the same day.

International Exhibition of Inventions

This exhibition is now being held at the Central Hall, Westminster, London, S.W., and will remain open until Oct. 14th.

Health Education Visits

The Socialist Workers' National Health Council has organised a series of visits to health institutions in and around London. The parties are conducted by Dr. F. G. Bushnell, late medical officer for Essex and Plymouth, and their object is "to familiarise workers with existing institutions and their management, and to press home the need for the socialisation of the health services." The visits are made on Wednesday afternoons, and will continue until Dec. 13th. There is also a lecture given at each institution on an appropriate subject, and the speakers include Dr. W. S. C. Copeman, Mr. R. Y. Paton, and Dr. Helen M. Jardine. The next institution to be visited is the Lewisham Hospital ("a rate-supported L.C.C. hospital") on Oct. 11th. Further particulars may be had from Dr. Bushnell at Nutley Cottage, Mimbridge, Woking.

CORRIGENDUM.—In the course on the preventive aspect of disease at King's College Hospital, the lecture on Jan. 25th on the control and prevention of infectious diseases will be by Dr. R. A. O'Brien, and not as stated in our issue of Sept. 23rd.

OBITUARY

ROBERT MORRISON, L.R.C.P. Edin.

Dr. Morrison, of Duffield, who died on August 29th, at the age of 74, was one of a fast disappearing type—the hunting doctor. He came of Ulster presbyterian stock, the son of James Morrison, of Toberdoney, Dervock, Co. Antrim, and was educated at Queen's College, Belfast, and Queen's College, Galway, and the Royal Colleges at Edinburgh, taking the old "triple qual" in 1885. All his life he was a friend of horses and dogs, and when he came to settle down in practice, the open-air life of a country doctor, before the days of motors, appealed to him irresistibly. Accordingly he settled in Duffield, a village on the edge of the Derbyshire hills, 42 years ago, and soon acquired an extensive practice—his sound technical knowledge and great kindliness appealing to every class of the community. In his younger days he was an admirable tennis player, good golfer, and excellent shot—but hunting was his real joy. He was thus a well-known figure for over 30 years with the Meynell and Harrington hunts; and whenever there was an accident in the field the first cry was "Where's Morrison?" He did not neglect his patients for his sport, but when hounds were anywhere in the neighbourhood, and he had no anxious cases on hand, he joined the hunt.

For many years he was medical officer to the Belper R.D.C., and held in addition many local appointments, while during the war he was M.O. to the Duffield V.A.D. Hospital. He married Mildred, only daughter of Mr. Alfred Pochin, of Leicester, and had three children, one of whom, Dr. Gordon Morrison succeeds him in practice. His widow and children survive him.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 9th.—4.30 P.M., UNITED SERVICES: Surg.-Capt. H. [illegible] ce of Wars on the Craft of [illegible] ess.)

TUESDAY.—5 [illegible] PHARMACOLOGY. Dr. J. H. [illegible] Approach to the Cause of [illegible] dress.)

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Dr. F. Parkes Weber: 1. Gout in the Hands of a Woman aged 22. 2. Erythræmia with Great Excess of Uric Acid in the Blood. Dr. E. Stolkind: 3. Erythroleukæmia [illegible] vera "Vaquez Disease") [illegible] Miss G. Barry: 4. Spina [illegible] hanges in the Legs in a [illegible] ill be shown.—8.30 P.M., OPHTHALMOLOGY. (Cases at 8 P.M.) Papers: Dr. [illegible] Wolff: Lupus Erythematosus [illegible] Mr. Eugene Wolff: Normal [illegible] Nerve-head in the Dog.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 9th.—8.30 P.M., Sir John Thomson-Walker: Surgery in the Early Nineteenth Century. (Presidential address.)

HARVEIAN SOCIETY OF LONDON.

THURSDAY, Oct. 12th.—4.30 P.M. (at the Royal Veterinary College, Great College-street, N.W), a Clinical Meeting.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Oct. 10th.—9 P.M. (at the Great Western Royal Hotel, Paddington), Dr. G. H. Oriel and Dr. Millais Culpin: Asthma.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.

THURSDAY, Oct. 12th.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. J. C. Young: Individual Psychology and Holistic Medicine.

SOCIETY FOR THE STUDY OF INEBRIETY.

TUESDAY, Oct. 10th.—4 P.M. (at 11, Chandos-street Cavendish-square, W.), Dr. A. E. A. Carver: Paraldehyde Addiction.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY, Royal Northern Hospital, Holloway-road, N.

WEDNESDAY, Oct. 11th.—8.45 P.M., Dr. R. A. Young: Empyema Thoracis: its Diagnosis and Management.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF LONDON.

MONDAY, Oct. 9th.—5 P.M. (at University College, Gower-street, W.C.), Dr. R. J. Lythgoe: Physiology of the Sense Organs. (First of six lectures.)

TUESDAY.—5 P.M. (at King's College, Strand, W.C.), Mr. J. W. Pickering, D.Sc.: Blood Plasma and Platelets. (First of four lectures.)

THURSDAY.—5 P.M. (at King's College, Strand, W.C.), Mr. W. Robson, D.Sc.: Metabolism of Carbohydrates, Fats, and Proteins. (First of four lectures.)

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL POST-GRADUATE COURSE.

THURSDAY, Oct. 12th.—10 A.M., Dr. W. N. Goldsmith: Fungous Diseases of the Skin. 10.45 A.M., Dr. C. Bolton: Ward Demonstration of Patients suffering from Gastric Diseases. 11.30 A.M., Dr. F. M. R. Walshe: Some Problems in the Treatment of Nervous Diseases. 12.15 P.M., Sir Thomas Lewis: Ward Demonstration of Patients suffering from Cardiovascular Diseases. 12.15 P.M., Mr. A. J. Gardham: Conservative Methods in Modern Surgery. 2 P.M., Dr. F. J. Poynton: The Treatment of Rheumatoid Arthritis. 2 P.M., Mr. Watkyn-Thomas: Demonstration of Ward Cases. 2.45 P.M., Mr. Humphrey Neame: The Differential Diagnosis of Conjunctivitis and Iritis, and their Treatment. 3.30 P.M., Dr. W. J. Pearson: Management of the Premature Child.

FRIDAY.—10 A.M., Mr. Gwynne Williams: Fractures of the Neck of the Femur. 11 A.M., Dr. H. P. Himsworth: The Management of Diabetes on High Carbohydrate Diets. 11.45 A.M., Prof. H. A. Harris: The Technique of Radiography of the Chest. 12.45 P.M., Dr. M. Maizels: Stools in Infancy. 2 P.M., Dr. Kenneth E. Harris: The Investigation and Treatment of Increased Venous Pressure in Congestive Heart Failure. 2 P.M., Mr. C. W. Flemming: Colles's Fracture. 2.45 P.M., Dr. J. W. McNee: The Classification and Treatment of the Anæmias. 3.30 P.M., Prof. F. J. Browne: The Toxæmias of Pregnancy. (This course is open only to graduates and students of the school.)

LONDON HOSPITAL MEDICAL SCHOOL POST-GRADUATE COURSE.

WEDNESDAY, Oct. 11th.—10 A.M., Dr. Maitland-Jones: Some Peculiarities of Disease in the Child. 11 A.M., Mr. Keizer: Teeth in General Practice (clinical demonstration). 12 noon, Dr. Panton: Coliform Infection of the Urinary Tract. 1.30 P.M., Mr. Donald: Sepsis (clinical demonstration). 2.30 P.M., Dr. Horace Evans: Nephritis (clinical demonstration). 3.30 P.M., Dr. Russell Brain: Herpes Zoster. 2 P.M., Mr. Lind[illegible] Surgical Operation. 4.15 P.M., Mr. Marrack: Si[illegible] Chemical Tests.

THURSDAY.—10 A.M., Mr. Muecke: Everyday He[illegible] 10.45 A.M., Mr. Goulden: Minor Injuries to [illegible] 11.30 A.M., Dr. O'Donovan: Dermatitis and Comp[illegible]sation. 12 noon, Dr. Hunter: Obesity. 1.30 [illegible] Mr. Brews and Mr. Lack: Gynæcological Demons[illegible]tion. 2.15 P.M., Prof. Ellis: Treatment of Neph[illegible] 3.15 P.M., Dr. Parkinson: Heart Failure. 4.30 [illegible] Dr. Leyton: Multiglandular Disease (Schors[illegible] lecture).

FRIDAY.—10 A.M., Mr. Milne: Low Back Pain. 11 A[illegible] Mr. Holland: Birth Control. 11 A.M., Mr. Patters[illegible] Demonstration of cases. 12 noon, Dr. Riddo[illegible] Headaches. 1.30 P.M., Dr. Bedson: Serum Prophyl[illegible] of Virus Diseases. 2 P.M., Dr. Wall: Medical Com[illegible]cations of Pregnancy. 3 P.M., Dr. Vilvandré: Ra[illegible]logical Survey. 3.45 P.M., Dr. Hutchison: Chr[illegible] Intussusception. 4.30 P.M., Mr. Dix: The N[illegible]operative Treatment of Minor Degrees of Prost[illegible] Obstruction.

SATURDAY.—10 A.M., Dr. Tallerman: Colic and Vomit[illegible] in Early Infancy. 11 A.M., Mr. Howard: Clin[illegible] Demonstration. 12 noon, Mr. Walton: The Surg[illegible] of the Gall-bladder. (This course is open only [illegible] graduates and students of the school.)

FELLOWSHIP OF MEDICINE AND POST GRADUA[illegible] MEDICAL ASSOCIATION, 1, Wimpole-street, W.1.

MONDAY, Oct. 9th, to SATURDAY, Oct. 14th.—METROPOLIT[illegible] HOSPITAL, Kingsland-road, E. Post-graduate Course [illegible] Medicine and Surgery and the Specialt[illegible] the whole of each day.—ST. JOHN'S [illegible] DISEASES OF TH[illegible] noon Course in [illegible] and lectures t[illegible] E., Ranelagh-ro[illegible] demonstrations [illegible] ITAL FOR DISEAS[illegible] W. Post-gradua[illegible] Course, for advanced students, in Cardiology, [illegible] the whole of each day.—PANEL OF TEACHER[illegible] Individual clinics are available daily by [illegible] ment with the Fellowship of Medicine. [illegible] are open only to Members and As[illegible] Fellowship.

WEST LONDON HOSPITAL POST-GRADUATE COLLEG[illegible] Hammersmith, W.

MONDAY, Oct. 9th.—10 A.M., Medical Wards; 11 A.M[illegible] Surgical Wards, Skin Clinic; 2 P.M., Surgical an[illegible] Gynæcological Wards; 2 P.M., Eye and Gynæcologic[illegible] Clinics; 4.15 P.M., Lecture, Mr. Roche: Hæmaturi[illegible]

TUESDAY.—10 A.M., Medical Wards; 11 A.M., Surgic[illegible] Wards; 2 P.M., Throat Clinic; 4.15 P.M., Lectur[illegible] Mr. Green-Armytage: Abortion.

WEDNESDAY.—10 A.M., Medical and Children's Ward[illegible] Children's Clinic; 2 P.M., Eye Clinic; 3.45 P.M[illegible] Venereal Diseases Demonstration.

THURSDAY.—10 A.M., Neurological Clinic; 11.30 A.M[illegible] Fracture Clinic; 2 P.M., Eye and Genito-urinar[illegible] Clinics; 4.15 P.M., Lecture, Mr. Woodd Walker[illegible] Surgery of Foot and Ankle.

FRIDAY.—10 A.M., Skin Clinic; 12 noon, Lecture o[illegible] *Treatment*; 2 P.M., Throat Clinic; 4.15 P.M., Lectur[illegible] Dr. Redvers Ironside: Diagnosis and Treatment o[illegible] G.P.I.

SATURDA[illegible] Wards, Children'[illegible] and [illegible] l Surgical Clinics.

DAILY.—[illegible] The Lectures at 4.15 P.M. are open to all Medica[illegible] Practitioners without fee.

CENTRAL LONDON THROAT, NOSE, AND EA[illegible] HOSPITAL, Gray's Inn-road, W.C.

MONDAY, Oct. 9th, to SATURDAY, Oct. 14th.—Intensive Post-graduate Course daily. (Second week.)

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 11th.—4.30 P.M., Mr. W. K. Irwin: Diagnosis and Treatment of Some Important Bladder Conditions.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 9th.—3.30 P.M., Dr. Gordon Holmes: The Sensory System.

TUESDAY.—3.30 P.M., Dr. Carmichael: The Physiology of the Cerebro-spinal Fluid.

WEDNESDAY.—3.30 P.M., Dr. Collier: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Riddoch: The Cranial Nerves and Special Senses.

FRIDAY.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses.

Out-patient clinic each day at 2 P.M.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Chandos-street, W.C.

SUNDAY, Oct. 8th.—10.30 A.M., Mr. E. D. D. Davis: Prevention and Treatment of Acute Infective Catarrh, or so-called Influenza. 11.45 A.M., Dr. K. Shirley Smith: Syphilis of the Heart.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Oct. 12th.—4.30 P.M., Sir Leonard Hill: Ventilation, Sunshine, and Clothing. 9 P.M., Mr. A. Edmunds: Deformities of External Genitalia.

GRESHAM COLLEGE, [illegible] E.C.

MONDAY, Oct. 9th, to [illegible] y at 2 P.M., Sir George New[illegible] System.

NDON SCHOOL OF DERMATOLOGY, St. John's Hospital, icester-square, W.C.

Tuesday, Oct. 10th.—5 P.M., Dr. W. N. Goldsmith: Anatomy and Physiology of the Skin.

Thursday.—5 P.M., Dr. G. B. Dowling: Mycotic Diseases.

ITUTE OF HYGIENE, 28, Portland-place, W.

Wednesday, Oct. 11th.—3.30 P.M., Dr. J. B. Alexander: Diet in Diabetes.

YAL INSTITUTE OF PUBLIC HEALTH, 23, Queen-square, W.C.

Monday, Oct. 9th, and following Tuesday and Wednesday.—4 P.M., Prof. J. C. Drummond, D.Sc.: Modern Views of the Vitamins and their Functions (Harben Lectures.)

EDS GENERAL INFIRMARY.

Tuesday, Oct. 10th.—4 P.M., Prof. G. W. Watson: Alimentary Disorders.

NCHESTER ROYAL INFIRMARY.

Tuesday, Oct. 10th.—4.15 P.M., Dr. F. R. Ferguson: The Differential Diagnosis and Treatment of Headache.

Friday.—4.15 P.M., Mr. E. D. Telford: Demonstration of Surgical Cases.

Appointments

ENTON, M. J., M.B., Ch.B. Sheffield, has been appointed Physician in Charge of Skin Department, Battersea General Hospital.

OUNG, J. BRUCE, M.D. Edin., M.R.C.P. Lond., Hon. Physician to the Connaught Hospital, Walthamstow.

rtifying Surgeons under the Factory and Workshop Acts:—

CAMPBELL, F., M.D., B.Ch. Belf. (Malvern); MORP[illegible] C., L.R.C.P. Lond., M.R.C.S. (Eskdale, Cumberland).

Vacancies

For further information refer to the advertisement columns

arnsley, Beckett Hospital and Dispensary.—Res. Surg. O. £300.

elgrave Hospital for Children, Clapham-road, S.W.—H.P. and H.S. Each at rate of £100.

irmingham, Dudley-road Hospital.—Jun. M.O.'s. Each at rate of £200.

olingbroke Hospital, Wandsworth Common, S.W.—Hon. Surg. to Ear, Nose, and Throat Dept.

radford Royal Eye and Ear Hospital.—Jun. H.S. £150.

ristol University.—Lectureship in Physiology. £400.

urnley, Victoria Hospital.—H.P. At rate of £150.

ambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

ancer Hospital, Fulham-road, S.W.—Asst. Radium Officer. £250.

hesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £150.

City of London Hospital for Diseases of the Heart and Lungs, Victoria-park, E.—H.P. At rate of £100.

Croydon Mental Hospital, Upper Warlingham.—Third Asst. M.O. £350.

Croydon County Borough.—Asst. School M.O.H. and Asst. School M.O. £500.

Devon County Council.—Asst. County M.O. £500.

Dorchester, Dorset County Hospital.—H.S. At rate of £160.

Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. At rate of £150.

Evelina Hospital for Sick Children, Southwark Bridge-road, S.E.—Hon. Dental Surgeon.

Glasgow Eye Infirmary.—Res. H.S. and Res. Asst. H.S. Each £100. Also Clin. Asst. £30.

Grocers' Company, Grocers' Hall, E.C.—Research Scholarships. Each £300.

Halifax Royal Infirmary.—Res. Surg. O. Also 3rd H.S. At rate of £250 and £150 respectively.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Two Hon. Asst. Surgeons. Also Res. M.O. and H.P. At rate of £150 and £100 respectively.

Infants Hospital, Vincent-square, Westminster.—Clin. Asst. Also Clin. Asst. to Radiological Dept.

Leeds University.—Research Fellow. £500.

Leicester Royal In[illegible] Visiting Anæsthetists.

Lewish[illegible] *risham, S.E.*—Asst. M.O. £350.

Liverp[illegible] *Hospital.*—Cas. O. At rate of [illegible]

London Homœopathic Hospital, Great Ormond-street, W.C.—Res. M.O. £100.

London Hospital, E.—Hon. Asst. Physician to Skin Dept.

Maidstone, Kent County Ophthalmic and Aural Hospital.—H.S. to Ear, Nose and Throat Dept. At rate of £200.

Manchester, Ancoats Hospital.—Res. M.O. At rate of £150.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Res. H.S. £120.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester, Whitworth St. West Hospital, &c.—Two H.S.'s. Each at rate of £50.

Metropolitan Hospital, Kingsland-road, E.—Sen. and Jun. H.S.'s. Also Cas. O. Each at rate of £100.

Middlesbrough, North Riding Infirmary.—Third H.S. At rate of £125.

North Middlesex County Hosp., Edmonton.—Medical Officer. £750.

Northwood, Mount Vernon Hospital.—Asst. Radiologist.

Nottingham General Dispensary.—Res. Surgeon. £250.

Nottingham Hospital for Women.—H.S. At rate of £150.

Plymouth Corporation Hospitals.—Anæsthetist. 2¼ gns.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. M.O. for Isolation Hospital. £200.

Queen Mary's Hospital for the East End, E.—Pathologist. £750.

Reading, North Berkshire Hospital.—Cas. O. £150.

Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.

Royal National Orthopædic Hosp.—Two Surg. Regs. Each £105.

Royal Northern Hospital, Holloway, N.—Second Ophth. S. Med. Reg. £200. Also Clin. Assts. for Neurological Dept.

St. Albans, Herts County Mental Hospital, Hill End.—Second Asst. M.O. £550.

St. James' Hospital, Ouseley-road, Balham, S.W.—Asst. M.O. £350.

St. Leonard's Hospital, Hoxton-street, N.—Sen. Asst. M.O. £550. Also Asst. M.O. £350.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. and Asst. Res. M.O.'s. At rate of £175 and £120 respectively.

St. Olave's Hospital, Lower-road, Rotherhithe, S.E.—Asst. M.O. £350.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.

Southend-on-Sea General Hospital.—H.P. £100.

Swansea General and Eye Hospital.—H.P. At rate of £150.

Taunton, Taunton and Somerset Hospital.—Sen. House M.O. At rate of £150. Also H.P. and H.S. Each at rate of £100.

Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £150

Western Ophthalmic Hospital, 155, Marylebone-road, N.W.—Sen. and Jun. Res. H.S.'s. At rate of £150 and £100 respectively.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Worcester (Worcester), Millport (Bute), and at Great Haseley (Oxford).

Births, Marriages, and Deaths

BIRTHS

BLEWITT.—On August 28th, at Poona, India, the wife of Lieut Basil Blewitt, R.A.M.C., of a daughter.

KENNEDY.—On Sept. 28th, 1933, at Broadhurst-avenue, Edgware, Middlesex, to Nancy Barbara (née Pickard), wife of Dr. Denis G. Kennedy—a son.

SHAW.—On Sept. 26th, at Heathcote, East Grinstead, the wife of Dr. H. B. Shaw, of a daughter.

STOKOE.—On Sept. 30th, at Lansdowne, Woodside Park, N., the wife of Dr. H. N. Stokoe, of a son.

MARRIAGES

STEWART—ROB.—On Sept. 27th, at St. Mary's Church, Oatlands Park, Weybridge, Dr. Gilbert Reginald Shipley Stewart, of The Croft, Stafford, younger son of Dr. H. M. Stewart, of Dulwich, to Margaret Mary Rob, only daughter of Dr. J. W. Rob, of Oatlands Park, Weybridge.

DEATHS

BOWER.—On Sept. 16th, 1933, at Elton House, Gloucester Ernest Dykes Bower, M.D., F.R.C.S. Edin., aged 79.

HAMILTON.—On Sept. 24th, suddenly, at Hove, Sussex, Charles Dai Hamilton, M.R.C.S., L.R.C.P., aged 70.

MAYO.—On Sept. 28th, at St. George's Park House, Great Yarmouth, Alfred Charles Mayo, M.R.C.S., L.R.C.P., aged 88 years.

WILSON.—On Sept. 29th, at Chippenham, Wilts, Mervyn Seppings Wilson, B.A., F.R.C.S., aged 79.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. R. J. G. Parnell is placed on the retd. list.

M. H. Adams to be Surg. Lt.

Surg. Lt. (R.N.V.R.) J. E. Davenport entered as Surg. Lt. for short service and appointed to *Victory* for Haslar Hospital.

ROYAL ARMY MEDICAL CORPS

T. D. Phelan to be Lt. (on prob.).

ARMY RESERVE OF OFFICERS

Lt.-Col. & Bt.-Col. E. Ryan, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

SUPPLEMENTARY RESERVE OF OFFICERS

Lt. G. F. Walker to be Capt.

TERRITORIAL ARMY

Lt. D. N. Nicholson to be Capt.

D. J. Campbell to be Lt.

INDIAN MEDICAL SERVICE

Lt.-Col. G. E. Malcomson retires.

Capt. S. M. Ali relinquishes his temp. commn.

NOTES, COMMENTS, AND ABSTRACTS

OUR BEST FRIEND *

By A. E. Boycott, D.M. Oxf., F.R.C.P. Lond., F.R.S.
GRAHAM PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF LONDON

Some years ago I was gossiping with a lady of sense and experience about the possible careers which were open to her son. Believing then, as I believe more firmly now, that the medical course offers a boy or girl a better training for life than they can get anywhere else, I suggested that he should be a doctor. "No" she answered, "I shouldn't like Philip to do medicine; the body is such a nasty thing, especially when it is ill; besides, he would see women at their worst." We did not pursue the discussion on that occasion; but what she said has remained in my mind, perhaps because, as it seems to me, it contains more error in fewer words than is often achieved. It will at any rate serve us for a text this afternoon.

The Goodness of the Body

From any discussion of her second statement, I would beg you have me excused. Let us turn rather to consider her other reason: "the body is such a nasty thing." How many people have said the same, how often have we all thought it. Our "vile flesh"—vile in Paul's sense of being worthless, vile in our current slang of being mean and beastly, always with the implication that we are in one way and another at variance with the house we live in and, as householders often do, expressing our dissatisfaction with it. To St. Francis it is "Brother Ass," to St. Augustine no more than a horrid vehicle of the carnal lusts of the flesh which we should get rid of as soon as may be. We realise now better than people did in his time that the body without the spirit is indeed worthless, though we have come to suspect that the spirit without the body may be a poor kind of wraith. But we are often enough vexed with the body none the less and complain about it because it does not fit in as well as we would like with our wilful and wayward affections.

Is this just or fair or kind? I think not, and I would like, if I can, to persuade you to a more friendly spirit. We are so used to finding in the body the ready servant of our will, whimsical and tyrannous as it may be, that we are apt to take much too much for granted. Think of all the simple pleasures of the flesh: the pleasure of drinking when you are thirsty, of eating when you are hungry (and sometimes when you are not hungry), of playing games and taking exercise till you are satisfactorily tired, of getting into a muck sweat and dropping into the sea, of sleeping, of waking in the morning and stretching yourself (the mechanism and meaning of that delightful experience might well engage the attention of Prof. A. V. Hill and Sir Thomas Lewis), of climbing mountains, of lying on the sofa. Think of these things and be grateful for a body which is so complacent and flexible and do not be cross with it if it sometimes says "I'm sorry, I can't," and if as time goes on it balks more often than it did: you can be sure at any rate that it is always doing its utmost to please you.

However, this is a medical school and the healthy body is not my particular business. "Especially when it is ill," said Philip's mother, and the concern of my professional life has been to try to make out what the body does when it is sick and injured. The more I get to know about it, the more does it fill me with wonder and delight, and the more does my respect and affection for the body increase. And as one broods over it all, some general principles begin to emerge which is the most delightful thing of all because the whole aim of the pursuit of natural knowledge is to discover principles which will pass as truths in helping us to go further, even if they are not the unattainable Truth.

WITH A CUT FINGER

May I illustrate this pilgrimage of pathology with some simple examples? You all know that if you cut your finger or your chin that it hurts and that the blood makes a mess, but you are reassured because you also know that the bleeding will soon stop and that in the course of a few days or less the wound will be healed. The pain annoys you, but you will, I think, realise that if the razor did not hurt you the very instant it cut into the skin a trivial nick might well be a serious slice before you realised what was happening. And how is it that the bleeding stops? Blood does not clot as it goes round the body inside the blood-vessels: that would never do, and when it does happen it gives rise to all sorts of troubles. But once the wall of a blood-vessel is cut it contracts, and when it and the surrounding tissues are injured, they produce substances which make blood coagulate so that the wound is soon filled with a clot of solidified blood. A small matter, you may say; but the unfortunate people known as "bleeders," in whom this mechanism fails and whose cuts go on bleeding, are so far handicapped in life that they very seldom grow up and have children. And then the wound heals and soon things are as they were and the body is whole again. Here, too, the injury itself produces its own cure. When cells in the body are injured and killed, ferments are set free which dissolve them and give rise to substances which stimulate the neighbouring healthy cells to grow and replace those which have been lost. The greater the injury, the more of these substances, so that the growth of new cells is proportionate to and exactly supplies the need for fresh cells. The body in other words heals itself. You may or may not make a fuss and tie up your finger or put spiders' web or cotton-wool on your chin; in so doing you are doing no more than giving the body some comparatively trivial help in doing its job in its own way.

WITH A HÆMORRHAGE

Or let us take a larger loss of blood such as might come from cutting the large artery at the wrist or those on the head with broken glass in an accident—such a hæmorrhage as will let out a pint or a quart of blood, which would be about a third of all that an adult has. In this instance the hole into the blood-vessel may be too large and the rush of blood out of it too fierce for the body to cope with unaided; unless someone puts their finger on the place the loss of blood will perhaps be more than the person can bear. But the body does what it can; the cut artery contracts and makes the hole smaller, and the sympathetic nerves are stimulated and rouse the liver to discharge a substance which hastens the clotting of blood—a change which passes off

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* Opening address at University College Hospital Medical School on Oct. 2nd, 1933.

an hour or two when it would be of no further e. When the bleeding has ceased or been stopped, the body finds itself in the difficulty that there is not enough blood to fill the blood-vessels. It is much the same situation as in a domestic water-supply when the intake pipe is too small; turning on the g tap in the scullery lowers the pressure so much that nothing can be had in the bedrooms or up the garden. And it is a situation which the body very much dislikes. To have the blood circulate properly, it must fit snugly and rather tightly into the blood-vessels; otherwise the heart cannot fill itself as it should and if it is not well filled it beats badly, so that if the blood-vessels are only partly full it is liable to fail altogether. What happens? The fall of blood pressure stimulates the nerves in the large vessels in the neck and messages are carried to all parts of the body which cause (1) an immediate general constriction of the smaller blood-vessels so that the capacity of the system is reduced to correspond with the diminished volume of blood, (2) the evacuation into the vessels of a reserve of blood which is kept in the spleen against such emergencies, and (3) a discharge of the special secretion of the small adrenal glands in the belly which in its turn increases the vaso-constriction, stimulates the heart, and sets free sugar from the liver—the most invigorating food the body can have. All this helps the body to carry on. And the refinements of the reaction are still wiser. Different parts of the body need a good supply of blood in different modes; it is wanted in the muscles only when they are active, in the skin only when sweating is appropriate, in the kidneys only when urine is to be secreted, in the stomach only when there is something to digest. These organs can be comparatively bloodless for a long time without much harm being done. But the muscle of the heart and the part of the brain which presides over breathing must have plently of blood continually; even a brief intermission will bring their activities to an end and result in death. Correspondingly (and I use that word deliberately) we find that the general narrowing of the blood-vessels does not involve these vital parts; blood is cut off from the muscles (a person after a severe bleeding has no interest in running) and the skin (he feels cold) but not from the brain and heart (which he cannot do without). In our domestic analogy, if we had to reduce our piping, we should do without the garden and the bath and maintain the kitchen and the closets.

So the body tides over the first emergency. But the baser organs cannot do without blood indefinitely, and this can be secured only by restoring the volume of the blood to its original level and allowing the vessels to relax to their normal size. To do this, liquid is sucked in from the tissues to the blood; it is not an instantaneous process and may take hours or sometimes a day or two to complete. To bring it off, the body needs plenty of water, which it does its best to receive by cutting off the blood-supply of the salivary glands, stopping the secretion of saliva, making the mouth dry and so causing thirst. The circulation through the walls of the intestines is also left open so that water is absorbed quickly. All of which is often promoted by the surgeons by putting in blood or water; in doing so, they are helping the body in its own way, not in theirs.

Its Code of Conduct

I have no doubt that we still have much to learn about this particular response to an injury. But we know enough about it I think to ask ourselves what does it all mean? What is the rationale of it?

If we add 2 to 2 we get 4 and there can be no other result; it is inherent in the nature of 2 that if you add it to 2 you have 4, and in the nature of 4 that it is the consequence of adding 2 to 2.

If I take this knife and leave go of it, it falls to the ground and I need not do it more than once to get you to agree that it happens every time I try the experiment. "Of course it does," you say, and if you are a trifle hasty you may add "the fall necessarily follows your letting go; you could not expect anything else." But I think a little reflection will show you that there is really no a priori and inevitable connexion between my leaving go of the knife and its falling down; from the nature of the case alone it might go upwards or sideways or stop where it is. We find, however, as a matter of endless experience, that knives and similar objects free to move in air do, in fact, always fall down. And further inquiry shows us that they fall down because the earth is beneath us and much bigger than the knife, and finally that any two bodies free to move attract one another in proportion to their bulk and the distance between them; if there were two knives and no earth, the two knives would both move towards one another until they met. This is the general principle which underlies the familiar fact that if you leave go of a teacup or a baby it drops onto the floor. We summarise it by saying the attraction is due to "gravity." We have no idea what gravity means or how it comes about; our law of gravitation is simply a summary of a large and consistent experience, and no one who was ignorant of the facts could have predicted the law. Knowing the law, he can predict a good deal of which he has had no experience.

Between cause and effect in the body there is often no obvious a priori connexion. We may say, I think, that it follows from the nature of the case that if you cut into a blood-vessel the blood will come out, but we certainly cannot say on the same grounds that the bleeding will stop or that the cut will heal. You know they will as a matter of everyday experience. No more could anyone predict from the nature of the case that a larger hæmorrhage is followed in due sequence by an alteration in the coagulability of the blood, by a contraction of the blood-vessels, by activity of the suprarenal gland, an absorption of water from the bowels, and the other events which I have sketched to you; nor does common everyday experience inform you of these more intimate details which are, in fact, probably unknown to many of you. What general principle connects these effects with their cause? Why surely nothing less than this, that the body responds to injury in such ways as are appropriate to getting over the difficulties which are presented to it and to healing the injury. The body in short behaves sensibly, and the more we know of its behaviour when it is ill the clearer does it seem that this is the principle which determines what happens.

DOUBTS

Some people will find a difficulty in believing that this is indeed the plan on which the body works. Some will feel piqued at the notion that the body knows better than they do. Others will complain that it introduces a suggestion of purpose which so many find intolerable. I do not understand why, for "purpose" is a curious word which may mean several things, and the more I know of the way the world works the less easy do I find it to get away from the feeling that it goes on in a way which has every appearance of being "purposive." No student of natural science abates one jot of the dignity of his occupation by a frank belief that the operations of nature are directed by God, though of course he has to realise that his own share in making things plain is perhaps more humble than he thought. Others again will refuse to believe that an effect follows from a cause unless they can trace out all the connecting links, and it must be confessed that it is only in a minority of instances that we have yet got even a rough appreciation of what these links are. Such people are depressingly agnostic; they do not even *believe that the mind* has an influence on the body because the mechanism of the connexion is as yet unknown to us; if they add an attempt to be logical, they believe in very little. And others may find a difficulty in imagining how such a state of affairs has come about. How Paley would have revelled in such indisputable proofs of the wisdom and goodness of God. And how easy it is for anyone who really believes in natural selection and evolution and their implications to see how such mechanisms as I have described to you have come to be an integral part of live animals; mammals could hardly have existed without an adequate way of coping with the emergency of hæmorrhage without the help of doctors and nurses.

The Law of Injury and Disease

These difficulties are then I believe of no great weight. And if they were substantial, we should still be faced with the fact of experience that *when the body finds itself in trouble it does things which are helpful*; this is a law of injury and disease which in its own field is as valid as the law of gravity. It is not merely that unexpected things happen which we could not have predicted from the bare incident which has occurred; it is that everything that happens runs as it were into the one groove which ends in restoration. After a hæmorrhage anything *might* happen; the temperature of the brain might rise 10°, or the kidneys might become fatty, or the rate of metabolism might be doubled. In fact these things do not occur, though without any principle to guide us we might suppose a priori that they quite likely might. And the unexpected things which do happen are connected with one another and their cause only in one way—by what they achieve.

Such then is the plain truth which runs through and consolidates all our experience of the body when it is ill. Apart from teaching, my job in life has centred round the examination of the body after death and the lesson which I am continually learning from post-mortem examinations is the versatility and courage, the ingenuity and determination with which the body strives to keep our house from tumbling about our ears. I do not wonder that people die; that is easy enough. What I marvel at is that they go on living with bodies so maimed, disordered, and worn out. In the end, when it has done all it can, the body has to give in and we have to fall out of this splendid procession of life; but it is not from idleness or wilfulness, and as I come away from the post-mortem room I often feel inclined to say "well done, good and faithful."

And so I would have you think more kindly of your vile flesh. When some accident happens which hurts you, be grateful for the pain, for it is your best protection. When you break your leg, the one thing necessary for salvation is that the broken bone should be kept quietly at rest so that it can heal itself; if it didn't hurt you to move it, you would waggle it about and get into a dreadful mess. When you have influenza, be glad you feel ill; the one th you need is to lie quietly in bed for a few days, w plenty to drink and a cheerful nurse; if you di feel ill you wouldn't go to bed, and then anyt might happen. Believe, if you can, that the b knows best, and respect your symptoms.

The Body Deserves Affection

Why do I want to know about all this and want to know about it too? It gives me, who am n practical doctor, a great deal of æsthetic pleas there is something in the tale which warms me. if a pathologist may venture to have an opi it seems to me of the very essence of doctor If you are going to spend your lives helping unhea bodies, you will do it all the better if you hav feeling for the body and an understanding of its w and habits. You cannot get on with a list of partic diseases and injuries in one column and a list of w to do in another. What a sick man generally wa is to get rid of his responsibility for what he does a to know what is going to happen to him. Events combinations of events will often be presented you which you have never experienced before, your power of prediction will depend on your appre tion of the general principles on which the body ac You want to know and understand it in the sa way as you know the people you are fond of. Wl Jane comes to know Tom well enough—I am n sure it would work the other way—she knows wl he thinks before he speaks, and can guess pretty w what he will do under any circumstances whi happen to arise. If you have friends—and friends I mean people who will let you be good them—and they need help, you want to help the in their way, not in yours. And so it is with the bod It is ready enough to help itself, and you cann do it better service when it is ill than to find ou what it is trying to do and help it to do it. Be friends with it and love it, for it is your own best friend—patient, faithful, incredibly long suffering, and woefully misunderstood.

VOCAL DISORDERS

It is proper that laryngologists should be cognisant of the methods employed by teachers of singing, and a little book on the cause and cure of vocal disorders[1] by a teacher has medical interest. It will be agreed that the general cause of functional dysphonia is distortion of the resonator; but Mr. Evatts describes this as consisting of the pharynx, the nasopharynx, and the mouth, and no mention is made here, or elsewhere in the book, of the nasal cavities, which perform such important functions in this connexion. The author rightly insists on a well-balanced position of the resonator, with the soft palate neither raised nor depressed, thus allowing the branches of the resonator to maintain their natural proportions. In his opinion distortion of the resonator is set up before the voice is used at all by the way in which it is affected by the intake of the breath. He believes that the change of quality of voice, described as a change of "register," is due to nothing more than distortion of the resonator—that is, to a wrong use of the mechanism—and that the theory of registers is responsible for many singers' troubles. He gives details of a large number of vocal and breathing exercises, the problems of the adolescent voice, and a short chapter on stammering. Everyone will not agree with all his methods and opinions, but the book shows evidence of his wide experience, and is written in a lucid and careful style.

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[1] Vocal Disorders, their Cause and Cure. By Edgar T. Evatts. London: J. M. Dent and Sons. 1933. Pp. 85. 3s. 6d.

ADDRESSES AND ORIGINAL ARTICLES

NEUROLOGICAL EMERGENCIES*

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I PROPOSE to deal with comparatively common ises in general practice, in which accuracy both in gnosis and treatment are essential. If you have en qualified and in practice for several years, you ay be unfamiliar with such terms as Froin's ndrome, or adiadokokinesia, and you might even be zy as to the origin and functions of the spino-alamic tract; yet none the less you can do good d sound work with a few of the more ordinary eurological tools, such as the knee and Achilles rks, the plantar and the pupil reflexes, aided by mmon sense and the power of observation, as in cognising conjugate deviation of the eyes, flaccidity rigidity of one side, and the mental response to ternal stimuli. Indeed your neurological equipment ay be compared with a small bag of five clubs, rried by a seasoned golfer, who will often do better ork with these, which he knows well, than the ager amateur with a caddie staggering under a load f a dozen or more of the newest weapons, which he as not had sufficient time or practice to learn the ses of. It is true that when you are reaching the Valter Hagen or Bobby Jones stage, and aspire to ecome an expert neurologist, you will require to be amiliar with the newest as well as the older literature, nd your bag of clubs, though swollen, will be able o supply the right weapon for the more delicate hots in diagnosis.

Fits

Fits of various kinds, or coma, due to many ifferent causes, are a common cause of difficulty, nd a correct diagnosis will often mean the saving of life.

You receive an urgent call, and find a middle-aged an, or woman, lying quite unconscious, perhaps at he foot of a staircase. If you know the patient s the subject of epileptic fits, your diagnosis may be asy, but you have to consider even then whether he patient fell in a fit before going upstairs, or whether a severe fall downstairs has caused a fractured kull, or whether it is a case of primary cerebral æmorrhage. Evidence of bleeding from scalp or ar, or bruising, will indicate a fall, and further vidence of unequal pupils, conjugate deviation of the eyes, twitching of face or limbs, or signs of hemiplegia, may clinch the diagnosis of cerebral injury. The position of the patient relative to the surroundings should be noted before his removal to a couch or bed. What next is to be done? All clothing should at once be loosened, and then removed, and the patient put to bed with hot bottles, well wrapped in blanket, to the feet. Never forget the danger of a hot-water bottle burn in these conditions. The odour of the breath may give a clue, an alcoholic smell suggesting possible drunkenness as the sole or contributory cause of the coma, but you must remember that a single glass of beer or cider taken two or three hours previously may be sufficient to taint the breath heavily. This is particularly important for police surgeons to remember in dealing with patients accused of being under the effects of alcohol to a degree rendering them incapable of being in charge of a car.

A highly nervous man too in such circumstances may stammer, and also sway in walking when under examination at the police station, or, a more difficult trap for the unwary, he may be the subject of slight ataxy from various causes, such as early tabes or combined sclerosis, cerebellar ataxy, or even aural vertigo.

The presence of definite nystagmus, especially if in one direction only, will indicate a lesion of the cerebellar system, but beware of diagnosing nystagmus from slight quick irregular movements of the eyes at the commencement of lateral deviation, especially in a nervous individual. Remember, too, that spontaneous nystagmus in all positions may be of congenital origin, such as albinism.

Conjugate deviation of the eyes may be either irritative or paralytic in origin. It is a common teaching that the eyes are turned towards the lesion in the brain in apoplexy, that is to say, that there is paralysis of the conjugate movement towards the opposite side, with unopposed action of the similar movement away from the sound side towards the side of the lesion. Deviation of the eyes may, however, be irritative from the lesion, and slight rigidity or even convulsions may be seen on the side that will be ultimately paralysed, and in this case the conjugate deviation of the eyes will be towards the sound side of the brain and away from the lesion, during the stage of cerebral irritation, ultimately swinging back towards the side of the brain lesion. Thus, in the early stages it is quite possible to diagnose the lesion on the wrong side of the brain.

The pupil reactions to light are a frequent source of error. Often they are said not to react when they are really normal, the test being carried out in a moderate or brightly lit room, with insufficient precautions. Beware of the small pocket torch as a test. Either a strong torch or electric light, or a bright window light should be used, both eyes being properly shielded for a few seconds before testing. Repeat the test, exposing each eye separately. Very small pupils will suggest opium poisoning, pontine hæmorrhage, or the Argyll Robertson pupils of tabes. Unequal pupils will suggest a gross cerebral lesion, such as cerebral contusion or hæmorrhage, but the Argyll Robertson pupils of tabes or G.P.I. are often unequal.

To return to our unconscious patient, now in bed. An X ray of the skull is important if the possibility of fracture has to be considered. This can be very efficiently done at the patient's house nowadays by portable apparatus of a special outfit driven by the car engine.

Depressed fracture, either in children or adults, is most important to recognise, though it may not be palpable as such, possibly only a lump being felt. The signs of cerebral injury, however, an irregular or slow pulse, slow or Cheyne-Stokes' breathing, unequal pupils, or squint, should indicate a graver type of cerebral injury than mere concussion, and pointing to either severe contusion, laceration, or compression from fracture or hæmorrhage. If, then, there is a definite lump or gross irregularity of the skull, it will be advisable not to wait for an X ray, but to proceed at once to shave and sterilise the area of scalp concerned, and to cut down upon the bone to make certain of its condition, when a depression may be often quickly dealt with and a life perhaps saved.

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* A post-graduate lecture given at St. Mary's Hospital Medical School on Sept. 29th, 1933.

Concussion may be followed by recovery of consciousness, and later may be followed by delirium, increasing drowsiness, and coma. This condition indicates the onset of cerebral œdema as a sequel of contusion of the brain and of numerous minute hæmorrhages, possibly even laceration of the brain in more severe injuries. Lumbar puncture will almost certainly show yellow staining from altered blood, or even the cerebro-spinal fluid may be mixed with fresh blood, the pressure of the fluid being high and registering 200–300 on the manometer. This is a very important stage to recognise, as the patient will almost surely die if left alone. A decompression operation must be done at once, a large bone flap being raised, so as to allow of expansion of the œdematous brain. There may be no localising sign or indication on which side to operate, in which case a right subtemporal decompression should be done. In a few cases the cause of the cerebral compression will be found to be an extradural hæmorrhage from a torn middle meningeal artery, but then there is almost always some local indication on which side to operate.

Lumbar puncture, too, may settle the question of cerebral hæmorrhage, the fluid being intimately mixed with blood. The inexpert may in such a case mistake the mixed blood and fluid for blood from a punctured vein, and be unaware that his needle has correctly pierced the spinal theca. More accurate information can be obtained by using a special spinal needle with manometer attached to read the pressure. If the fluid rushes up the tube past the normal 140 or 150 mm. mark to 250 or more, then severe intracranial pressure is evident. Beware then of withdrawing more than the minimum of blood-stained fluid, as fall of pressure might start fresh cerebral hæmorrhage.

Examination of the optic discs should be done as soon as convenient, as clues to the condition may be found in retinal hæmorrhages, large or small, albuminuric retinitis, or the choked discs of cerebral tumour. In the latter condition immediate benefit may result from dehydration by intravenous injection of 3 oz. of 15 per cent. salt solution, or, if that method is not possible, the rectal injection of 8 oz. of a 25 per cent. solution of magnesium sulphate.

Coma

The causes of coma are too numerous for us to examine them all. In epileptic coma the patient lies flaccid with dilated pupils and stertorous breathing, somewhat livid in colour, no conjunctival reflex, the tongue possibly bitten, with blood around the lips, and evidence of relaxed sphincters. After two or three minutes in this state he may quickly recover, or may go off into a heavy sleep for three or four hours.

Narcolepsy.—Deep sleep resembling coma may be due to narcolepsy, a curious condition in which an uncontrollable desire to sleep recurs at irregular intervals. Subjects of this disease also are liable to sudden falls, without loss of consciousness, cataplectic attacks, which must be distinguished from petit mal. These attacks are brought on especially by the emotion of laughter, the legs giving way suddenly. Indeed, they remind us of the well-known saying of being "helpless from laughing." Bromide and luminal are of no use in this disease, but ephedrin may be tried. Similar overpowering sleep may be met with in acromegaly, and in other lesions near the pituitary infundibulum and floor of the third ventricle, an area of the brain which is especially associated with the phenomena of sleep. This association is also seen in encephalitis lethargica, in which the vascular lesions are particularly prone to affect this neighbourhood.

Coma may, of course, be due to many other poisons than alcohol. Nowadays the barbiturates, as medinal, or veronal, and luminal are commonly taken in attempted suicide. Opium and morphine poisoning are less common since the Dangerous Drugs Act, except in medical men. If no signs of corrosion around the mouth and lips are evident in the absence of signs of cerebral injury or hæmorrhage, or causes already discussed, washing out the stomach should be resorted to as soon as possible, using weak permanganate solution, if obtainable. Strong coffee should then be inserted through the tube, and hypodermic injections of ether, coramine, and camphor in oil.

The breath of a comatose patient may suggest alcoholism, or the heavy urinous odour of uræmia or the sweetish odour of acetonæmia in diabetic coma. For uræmia, rectal injection of 25 per cent magnesium sulphate solution, and venesection of 15 oz. should be done, followed by the slow injection of half a pint of normal saline, followed by a smart purge.

In diabetic coma the immediate hypodermic injection of 30 units of insulin may restore consciousness, when a piece of cane sugar should be given, and blood-sugar estimations made. It must not be forgotten that coma may ensue in a diabetic patient due to hypoglycæmia, from excessive insulin dosage, especially if this is given shortly before heavy exertion, as a game of cricket or football. This condition is usually preceded by irregular twitchings of the limbs. The blood-sugar is then much below normal, and the immediate intravenous injection of 20 c.cm. of 30 per cent. glucose solution should be administered, or failing that, rectal injection of 4 oz. of 30 per cent. glucose.

Hypoglycæmia may even occur without insulin treatment in cases of pancreatic tumour involving the Islands of Langerhans. These have been successfully removed by operation.

Recurrent Convulsions

Recurrent convulsions may be due to gross cerebral injury, such as cerebral hæmorrhage, cerebral tumour or abscess, or depressed fracture, with or without meningeal hæmorrhage. Uræmia and puerperal convulsions are due to toxæmia from renal inefficiency, and if the fits are numerous they should be stopped by a hypodermic injection of morphia, or cardiac failure may ensue. Recurrent convulsions in epilepsy, known as status epilepticus, may also endanger life from heart-failure, and are best arrested by a rectal injection of grs. 20 of choral hydrate with 40 of bromide, in 2 oz. of water. Inhalations of chloroform will also act quickly, though you are more likely to be blamed should the patient die while it is being administered. The recurrent slighter and unilateral convulsions in cerebral tumour or other localised lesions of the cerebral cortex are known as Jacksonian epilepsy, or as Jackson himself named them, epileptiform fits. They also are quickly arrested as a rule by a rectal injection of chloral and bromide, or, if the patient retains consciousness, as is often the case, the dose may be administered by the mouth. Three grains of sodium-luminal, the soluble salt of luminal, may be given instead, or it may be given intravenously, if a very speedy effect is desired.

Headache

Headache is one of the commonest symptoms calling for treatment, and its various causes are almost finite in number. Yet, before administering aspirin, henacetin, bromide, antikamnia, phenazone, or any this range of painkillers, some rough attempt should made to locate the cause. If it is one of a long ries of headaches that have recurred at intervals for ears, it is probably a case of migraine, especially if e headache is preceded by visual spectra of the ell-known scintillating scotoma or fortification type, the visual interference may be the sudden onset of emianopia which will last perhaps 20 minutes. have known the case of a hospital nurse who, when st attacked with this visual disturbance went to ok at herself in a mirror, and being able to see ly one half of her face became so frightened that e went off into hysterical convulsions. No headache present in this prodromal stage, but after half an our or so it may rapidly become violent and almost nbearable. An injection of 10 minims of 1 in 1000 drenaline solution is sometimes very efficacious, but e ordinary headache remedies taken by the mouth re often useless, more particularly if vomiting starts arly, as no remedy taken by the mouth can be etained. A hypodermic injection of grs. 3 of sodium uminal may then be given if the adrenaline has ailed. In those cases in which vomiting does not tart early, a cachet of grs. 7 of pyramidon with rs. 3 of cannabin tannate, grs. 1½ of sodium luminal nd gr. ⅙th heroin is a useful combination to control he severity of the pain, sometimes aborting it within n hour in cases which otherwise are likely to continue or 12 hours or more. A heaped teaspoonful of fervescing litmopyrin (Bishop's) in a small wine-lassful of water taken immediately after the cachet s a useful addition.

Recurrent violent unilateral headaches may be due o other causes than migraine. One of the commonest nd most important to recognise is sinus infection f the frontal sinus or of the antrum. Pain starting over the eyebrow about 10 or 11 A.M. and lasting ntil the late afternoon, day after day, is very uggestive of this cause, and the pain, especially in frontal sinusitis, may be so violent as to be almost unbearable. A small pledget of cotton-wool soaked in 20 per cent. cocaine solution should be gently inserted and pressed against the lateral wall of the upper nasal cavity. This may arrest the pain almost like magic, and it acts by constricting the turgid mucous membrane and allowing drainage to take place from the sinus into the nose, thus relieving pressure. Do not forget the serious danger of a chloroform anæsthetic soon after using cocaine, as many deaths have been thus caused. Transillumination of the sinuses with a small but strong electric light in a darkened room will usually demonstrate a marked difference between a normal and an infected sinus or antrum, and the technique is so simple that every one of us should be familiar with it, and it should be used in every case of constant or recurrent headaches. X ray pictures of the sinuses should also be taken when in doubt, and transillumination cannot reach the ethmoidal and sphenoidal sinuses.

Another form of recurrent unilateral violent pain in the eye and eyebrow is not associated with sinus infection, but may be a form of migrainous neuralgia. When limited to the region of the eyeball, I speak of it as *ciliary neuralgia*. The violence of the pain may be so intense as almost to drive sufferers to suicide, the pain lasting for one to two days, and recurring every few days for a period of weeks, and then perhaps disappearing for several months. Nasal douching with cocaine solution should be tried, as already described, and I have had several cases which have been completely cured by alcohol injection of the Gasserian ganglion. This type of neuralgia is quite different from that of the paroxysmal tic of *trigeminal neuralgia*. In the latter the paroxysms of pain last only for half a minute or so, but may recur every two or three minutes. I saw one such case a few weeks ago in August which had been sent home to me from Burma, who had had such violent shocks of facial pain on the right side every two minutes with very little sleep, since the beginning of June. Alcohol injection of the Gasserian ganglion arrested the pain instantly, but I cannot recommend this treatment to you for your own use in practice, as it is a very delicate method and requires long training to acquire the necessary dexterity.

Headache is likely to be a prominent symptom in the early stage of *meningitis*. There is probably some fever, and possibly delirium, and at first you may be doubtful of early typhoid. In the latter the abdominal reflexes are often absent and the typical rash may be seen, but do not be put off the diagnosis because the Widal serum reaction is negative during the first eight days. The spleen, too, may be palpable and there is no head retraction, no rigidity of the neck muscles, or Kernig's sign, as are likely in meningitis. The pupils in the latter may be conclusive, sluggish, perhaps unequal, and dilated, with an irregular pulse and vomiting. Lumbar puncture should be done, and the pressure noted on the manometer, if you have the necessary apparatus. The pressure is likely to be raised far above the usual 140 mm. Note if the fluid is clear or turbid. If clear, it may be a case of tuberculous meningitis, and examination of the fluid by a pathologist may demonstrate TB bacilli in the spider web clot after standing, and the fluid is likely to contain diminished chlorides and a large excess of lymphocytes. Somewhat similar symptoms may occur in serous meningitis, but TB bacilli and lymphocytes are then absent and rapid cure is likely to occur after the withdrawal of 20–30 c.cm. of cerebro-spinal fluid. If the fluid withdrawn is turbid the meningitis is likely to be of the cerebro-spinal type due to the meningococcus, or it may be pneumococcal or even streptococcal. Stained films will distinguish between these forms, but in each case repeated daily lumbar puncture should be done, with the withdrawal of as much fluid as will flow readily, and then give an intrathecal injection of 20 c.cm. of antimeningococcus serum. If the meningitis is secondary to mastoid disease, or following an operation on the nasal cavities, or fractured base, or cellulitis, then it is usually due to streptococcus infection, and the chances of saving your patient are very slight, though the cerebro-spinal fluid should be drained by repeated lumbar puncture, twice daily, and hexamine administered by the mouth in grs. 20 doses t.d.s. in a tumblerful of water. Antistreptococcus serum is of probably doubtful value, though it may be tried.

Headache in *cerebral tumour* may be intense, calling for urgent relief. Lumbar puncture here is dangerous, because of the great risk of the increased pressure in the ventricles forcing the medulla and pons into the foramen magnum, with a fatal result. Morphia also is dangerous if there are signs of commencing torpor, but aspirin and phenacetin may be used safely. Certain relief may be obtained by puncturing the lateral ventricles, but this is an expert surgical procedure, and gives only temporary relief, unless followed by an extensive decompression.

Pyrexia of 101°–103° F. with cerebral symptoms of headache, torpor, and even delirium and coma may be the initial stage of an acute *poliomyelitis*, so that it is important to watch the muscular tonus of the limbs for the onset of a flaccid palsy. The deep reflexes will probably be lost, but sensation is unimpaired. The paralysis may spread widely during four or five days, though the ultimate permanent paralysis and muscular atrophy is usually much less in extent that is present in the first week. In young children there is often little or no pain, and in some cases the sudden onset of paralysis of a limb is the first symptom. In young children, too, scurvy rickets may simulate acute poliomyelitis on account of the muscular weakness, and I have known of a case in which the practitioner cured his little patient with potato and fresh milk after a leading neurologist had diagnosed infantile paralysis. Thus may too narrow a specialism defeat itself. Unfortunately little can be done either to avert poliomyelitis or to arrest the development of the spinal lesions and the subsequent muscular paralysis. Serum from a previous sufferer from the disease has been tried many times, apparently without any good effect. During an epidemic of the disease it will be wise to advise all communities, such as school-children, to have the throat and nose sprayed daily with a mild antiseptic. Acute poliomyelitis occasionally attacks adults, and it is then often an extremely painful disease for the first few days, usually being mistaken for neuritis, malaria, dengue, or influenza.

During epidemics of poliomyelitis there is often seen an increase in the number of cases of *herpes zoster*. This is probably also due to a filter-passer virus, and it has a special relationship to the virus of varicella, innumerable cases of apparent infection of the one disease from the other being recorded. When zoster attacks the trunk, the onset of unilateral pain should give the clue, and it is wise to warn the patient that presently an eruption in the region of the pain is likely to occur, lest the rash when it appears is attributed to the treatment, and a change of doctor called for. Zoster is especially liable to affect the ophthalmic branch of the trigeminal nerve, and the pain may be agonising. If the vesicles attack the cornea, severe scarring, perforation, and blindness may result, or iritis and even optic neuritis are met with. An ointment of zinc cream containing cocaine and chloral hydrate should be used for the painful rash, and then dusted over with boric powder and starch. Morphia may be necessary to give rest and sleep in severe cases, though this should not be continued for more than a few days owing to the danger of formation of an addiction habit. In old people *post-herpetic neuralgia* is exceedingly common and is very difficult to treat. Morphia should be avoided and reliance placed on milder sedatives such as bromide, and hypnotics, including allonal, adalin, and many others of this type, changing the drug every week. Operative treatment is useless, and alcohol injection is also as a rule useless in the spinal cases, though occasionally Gasserian injection is helpful in the trigeminal cases, when in addition to the pain there is troublesome hyperæsthesia.

Facial Neuralgia

Facial neuralgia of the extremely violent paroxysmal type known as trigeminal neuralgia, or tic douloureux, I have already referred to. Before making this diagnosis, do not forget to examine for a carious tooth or even an erupting wisdom in a young adult. Impacted molars also may be a source of intense facial pain somewhat resembling trigeminal neuralgia, though less sudden and paroxysmal in type. Occasionally the pain in paroxysmal tic is so violent and recurs so frequently, that until expert help by alcohol injection of the Gasserian ganglion, or surgical resection of the posterior sensory root can be undertaken, something must be attempted to relieve the agony which otherwise may, and often did in the past, drive the sufferer to suicide. Morphia injections, if necessary, combined with scopolamine, will undoubtedly bring temporary relief, but this remedy should only be used in extreme urgency, if other remedies fail, as there is a very real danger of a morphine habit being formed in such cases. Quite a useful treatment to mitigate the severity of the pain is the inhalation of trichlorethylene, glass capsules of which, containing 10 minims, encased in cotton-wool, can be carried by the patient and broken for inhalation when required, just as the well-known ampoules of amyl nitrite in anginal cases.

Probably you will not have this drug with you on the first occasion you have to deal with these violent painful spasms, but very likely you carry an ethyl chloride spray, which may be sprayed on to cotton-wool or a handkerchief and inhaled. This is preferable to a morphine injection in its rapidity of action, but its effect is less lasting. Of course, you will not leave any quantity of this drug in the patient's hands.

Vertigo

Vertigo may be so sudden and violent in onset that your help will be urgently required. It may be either objective or subjective in character. In the former variety external objects appear as if they were moving, such as the pictures swinging on the wall, or the floor appears to rise up and hit you. This movement of objects is due to a forced movement of the eyes, and is an indication of sudden interference with the cerebellar system. If the objects continue to swing, this is due to the nystagmus set up by the irritant process, usually of labyrinthine origin, such as otosclerosis. As a rule, chronic deafness in one or both ears, with tinnitus, have been complained of for some time, but even the pressure of a loose plug of cerumen on the tympanum may produce troublesome vertigo of this sort. Occasionally such labyrinthine vertigo precedes the onset of any noticeable deafness or tinnitus, and if accompanied by vomiting, it may not be recognised as Menière's disease, but may be ascribed to more serious intracranial disease such as cerebellar tumour or thrombosis, or an acoustic fibroma growing from the sheath of the auditory nerve in the posterior fossa. In tumour cases the usual symptoms of intracranial pressure must be looked for, headache, congestion of the optic discs, strabismus, and other cranial nerve palsies.

Cerebellar Thrombosis

Cerebellar thrombosis is a feature of a not very rare thrombosis of a small artery given off by the vertebral before it joins the basilar artery at the base of the brain. This little vessel is known as the posterior inferior cerebellar artery, and it supplies the side of the medulla as well as the under surface of the cerebellum. I have seen quite 50 cases of this lesion, and the symptoms it produces are not difficult to recognise. Sudden urgent objective vertigo occurs, usually causing the patient to fall down, with a feeling of intense nausea, probably vomiting, and intense feeling of malaise. Often the vertigo is of such a nature at first that his position in space appears to him quite altered or even reversed. Objects will not appear to keep moving, as in aural vertigo, as the forced movements of nystagmus do not continue for long, but the spatial distortion may continue for as long as two days. One such patient of mine fell suddenly when in his bathroom, and owing to the immediate spatial distortion produced, he felt as though the electric light pendant appeared to be sticking straight upwards at him from below, and he hung on tight to the side of the bath to prevent himself from falling down on to the ceiling. On examination later in bed there is usually found analgesia of one side of the body up to the neck on the opposite side to the lesion, with loss to pain and heat on the trigeminal area of the same side. The treatment for such cases of cerebral lesion is chiefly symptomatic, with complete rest in bed, and sedatives. It may be many weeks or even as long as four or five months before they learn to walk again, the gait being extremely ataxic and almost crab-like at first. Ultimate complete recovery is, however, almost the rule, though the crossed analgesia may remain as a permanent sequel.

The treatment of labyrinthine vertigo due to otosclerosis is very difficult, and the ear, nose, and throat surgeon and the neurologist alike may fail to make much impression on it. Acute cases must be kept in bed, the room somewhat darkened, and bromides, but not aspirin or salicylates or quinine, administered. Avoid, therefore, Faivre's cachets in these cases. A local blister or mustard leaf behind the ear on the affected side may also be of service.

In any case, and this applies to all your treatment in practice, keep on trying. Do not tell your patient there is nothing more to be done. I have more than once heard a patient say of his medical attendant "I like So and So, he never gives up." Never take away hope from your patient, it is often one of the finest remedies not in the pharmacopœia. Let your working motto be: Guérir quelquefois, Soulager souvent, Consoler toujours.

INFECTION OF THE NASAL SINUSES AND TONSILS IN THE PSYCHOSES

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The importance of toxæmia as a causative factor in the psychoses is still undetermined. The present paper deals with the part played by infections in the mouth and nasal sinuses. A recent monograph [1] shows that in Birmingham mental hospitals these infections are found in the large majority of psychotics, and are considered to be the most important causal factor in most forms of mental disease. In the same monograph, however, Clark and McCowan report that, working at one of the Kent county mental hospitals, they found the incidence of sinusitis to be about 5 per cent.

It has been the practice at Cardiff City Mental Hospital for some years to carry out a routine oto-rhinolaryngeal examination of every admission, and this paper is based on the results of examination and treatment of the 807 consecutive admissions to the hospital during the three years 1930–32.

The theoretical aspects of the subject have been dealt with fully in the aforementioned monograph, and this paper is therefore confined to a description of methods employed, incidence, and results of treatment.

NASAL SINUSITIS

Special investigation of the sinuses was carried out in every case which gave the slightest indication, objective or subjective, of sinus trouble, and also in all cases where the mental state suggested a possible toxic causal factor, confusion of greater or lesser degree being the chief criterion. The investigations included transillumination, radiography, and proof puncture of the sinuses.

Technique of Sinus Investigation.—In the nasal investigations the technique used for the collection of the material was that of Watson-Williams.[2] Saline wash-outs of the maxillary antra and ethmoidal and sphenoidal sinuses were made, with the exception of an occasional sphenoidal sinus which proved inaccessible. Separate needles were used for the puncture of each sinus, so as to avoid the possibility of infection from one sinus contaminating the washings from another.

Technique of Bacteriological Investigation.—The saline washings were examined microscopically for cellular contents. Cultures of the washings were made, aerobically and anaerobically, and any colonies obtained were subcultured. The subcultures were examined, and if found pure were typed by means of sugars. Vaccines were prepared from the subcultures when advisable.

Results of Sinus Investigation.—The number of cases dealt with during the three years was 807 and, of these, indications for complete sinus investigation were present in 51. These indications were local in 18, mental in 21, and both local and mental in 12.

The detailed bacteriological examination of sinus washings gave some growth in the culture plates in no less than 70 per cent., but, apart from the cases of definite sinusitis, the growth was extremely slight; and this finding of a few organisms in apparently healthy sinuses is probably of no significance. Unfortunately, in the absence of control investigations in healthy non-psychotics, this point cannot be definitely settled; but it seems unjustifiable to suggest any connexion between such findings and the psychosis. When an intradermal test was performed with a vaccine prepared from such organisms, the test was negative, suggesting that the patient was not sensitised to the organisms. A course of such vaccines had no effect on the physical or mental state of the patients; nor did it produce any striking change in the opsonic index of the homologous serum. Definite evidence of sinusitis was forthcoming in 24 patients—viz., 6 toxic-exhaustives, 1 obsessional neurotic, 3 schizophrenics, 6 manic-depressives, 4 involutional melancholics, 4 epileptics.

Much the commonest organism was *Staphylococcus albus*, and this was the only organism isolated in pure culture. The following organisms were amongst those found on more than one occasion: *Micrococcus catarrhalis*, diphtheroid organisms, Friedlander's bacillus, *B. mucosus capsulatus*, *Staphylococcus aureus*, *Streptococcus viridans*, *Streptococcus hæmolyticus*.

The clearing-up of the sinusitis, with the tonsillitis when present, resulted in improvement in all 6 toxic-exhaustives, the obsessional neurotic, 1 schizophrenic, 3 manic-depressives, and 1 epileptic, but no involutional melancholic. This means that in the 24 cases treated, improvement resulted in 50 per cent. In mental cases it is extremely difficult as a rule to assess the effects of treatment, and this is particularly so when dealing with the recoverable psychoses. Full allowance has been made for this in the above assessments. What is claimed is that recovery in the manic-depressives was appreciably accelerated by the treatment. The schizophrenic improved sufficiently to go home, whereas before treatment she seemed destined to spend the rest of her life in hospital. The treatment seemed a valuable adjunct to the psychotherapeutic treatment of the obsessional neurotic. The epileptic listed amongst those improved by the treatment had no other special form of therapy while in hospital—and, as there was considerable improvement in the number of her fits and her general mentality, it was felt justifiable to attribute the improvement to the clearing-up of her sinusitis and removal of her septic tonsils. It is, however, in the toxic-exhaustive cases that I feel more certain of the beneficial results of treatment. In the majority of the six cases treated, the course of the illness left no room for doubt that the clearing-up of the septic sinuses and tonsils was the important element in the recoveries.

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[1] Jour. Ment. Sci., 1932, lxxviii., No. 322.

[2] Ibid., p. 647.

Relative importance of local and mental indications.—Sinusitis was present in all 12 cases where the indications were both local and mental, in 1 of the 21 cases with only mental, and in 11 of the 18 cases with only local indications, the negative results in the latter being chiefly where the indications were subjective. Of the 12 cases which improved as a result of treatment, 11 had shown both local and mental indications, the remaining 1 being the epileptic where only local symptoms were present. While the results might be said to suggest that for the diagnosis of sinusitis a routine rhinolaryngeal examination is sufficient, without reference to mental symptoms, I feel convinced that all cases showing confusion or other toxic symptoms should be submitted to full examination, and here it should be emphasised that close coöperation between the rhinologist and the medical officer in charge of the patient is essential.

TWO CASE-HISTORIES

The following illustrative case-histories show a partial recovery in a hebephrenic and a complete recovery in a case of toxic-exhaustive psychosis.

CASE 1. Aged 28. Single. Occupation: nil. Admitted Dec. 18th, 1929, with a history of five years' duration. She was an advanced hebephrenic, extremely irrational, practically inaccessible, given to wandering about in an aimlessly restless fashion, continually attempting to kiss those around her, and behaving in a generally erotic manner. She was autistic, actively hallucinated, interfering, mischievous, and untidy. She was in rather poor general health, emaciated (7 st.), constipated, and somewhat toxic-looking.

Examination by the rhinologist revealed pus on the floor of both nostrils, with enlarged middle turbinals. Proof puncture of the right antrum gave pus, and intranasal drainage of the antrum was performed. Proof puncture of the left antrum gave mucus. The left middle turbinal was removed and the ethmoids drained. The sphenoids were clear.

Her physical health improved, and four months after operation she had gained 4 lb. in weight; but there was no appreciable mental change. Examination at this time still showed pus in both nostrils and high up in the posterior ethmoidal region, while a skiagram showed opacity of both antra with the frontal and sphenoidal sinuses clear. Further operative treatment was considered advisable, and on Feb. 11th, 1931, polypi were removed from the ethmoids and the ethmoidal labyrinth was opened up. Wash-out of the antra gave mucopus. A Friedlander type of organism was cultured and an autogenous vaccine prepared and administered. The sinuses continued to drain well, and by the end of 1931 her sinusitis appeared to have cleared up; the skiagrams corroborated this.

Her mental progress had been very slow, but by this time there was definite evidence of improvement in her general behaviour, though she still exhibited many mannerisms, showed little interest in reality, spoke in whispers, and was given to the nursing of odd articles which she called her "baby." It is of interest that her hyperglycæmic index[3] varied pari passu with the clinical evidence of her toxæmia, being high on each occasion before operative interference and falling to normal afterwards. She continued to make steady progress, and was allowed out of hospital on trial on August 12th, 1931, having reached the "recovery with defect" stage of the schizophrenic. Her weight was then 8 st. 10 lb. She was seen and discharged at the end of four weeks, the report being that she had occupied herself well at home, using her own initiative, mixing freely with her friends, doing her own cooking and shopping, and taking a normal interest in her surroundings. Her improvement has been maintained.

Comment.—The clinical result of the clearing up of the chronic sinusitis in this case points to its having been a potent contributory factor in the psychosis; and it is probably a legitimate surmise that early treatment of the sinuses would have prevented much of the residual defect.

CASE 2. Aged 27. Married. Housewife. Admitted as a voluntary patient on July 1st, 1931, from the psychiatric out-patient department of the Cardiff Royal Infirmary, suffering from a toxic-exhaustive psychosis.

The patient was married in April, 1931, before which she had been a forewoman in an oilskin factory. For some time before marriage she had found herself "unable to think properly," "as if my mind was all in a muddle," and she found it difficult to sustain interest in things which she had formerly enjoyed. She found the idea of marital relationships "disgusting," and at the time of her admission the marriage had not been consummated. She became depressed and tearful, easily fatigued, subject to nightmares, and aurally hallucinated, her hallucinations being vague and chiefly hypnagogic. This was her condition on admission.

She lay in bed, taking little or no interest in her surroundings, and frequently picking her face and hair. She wore a look of distressed perplexity, but stated that it was "lovely to be here—like Heaven." There was a mild degree of confusion present, more subjective than objective. Her physical health was poor. She had a sallow, toxic look, appeared exhausted, and had some albuminuria and secondary anæmia with relative lymphocytosis. Her breath was foul and her tongue dirty. She had large septic tonsils, and polypi and pus in both nostrils and on the posterior pharyngeal wall. The skiagram showed opacity of the left sinus. On Sept. 22nd, 1931, up to which time she had shown no appreciable change, operative treatment was carried out. Wash-out of the right antrum gave thick pus; of the left antrum, blood-stained fluid. The ostium of the left antrum was partly blocked by overhanging mucous polypi. Both right and left ethmoids were full of polypi, which were removed, and the ethmoidal cells were opened with spoon and curette; the right antrum was drained intranasally and the tonsils were removed. An intradermal test was positive, and the opsonic index rose as a result of a course of autogenous streptococcal vaccine.

Discharge of pus continued for some months, and adhesions between the septum and right middle turbinal had to be separated; but ultimately the condition healed up satisfactorily. Improvement in the mental state set in soon after operation, and the more striking symptoms, such as hallucinations, quickly disappeared. Her physical health also improved. Her feelings of inadequacy and confusion, her fatigability and inability to concentrate were much slower in clearing up; but by December she was spending week-ends at home—and on March 12th, 1932, she was discharged completely recovered. Her recovery has been fully maintained, she is living and enjoying a normal married life, and was recently delivered of a healthy child.

Comment.—The history and course of this psychosis are in keeping with the view that her sinusitis and tonsillitis were causal of her toxic-exhaustive psychosis.

RESULTS OF TONSILLECTOMY

In 25 cases—i.e., 31 per cent.—including 8 cases of sinusitis, the tonsils were found to be hypertrophied, cryptic, or frankly septic, sufficient to justify tonsillectomy. The diagnoses in these cases were:—

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[3] McCowan, P. K., and Quastel, J. H.: THE LANCET, 1931, ii., 731.

Manic-depressive, 8 (2 with sinusitis); involutional melancholia, including 1 puerperal case, 2 (both with sinusitis); schizophrenia, including 1 puerperal case, 6 (1 with sinusitis): toxic-exhaustive psychosis, 5 (3 with sinusitis); epileptic psychosis, 2 (1 with sinusitis); secondary dementia with attacks of confusion, 1; chronic epidemic encephalitis, 1.

In 15 of these cases the physical health improved after operation, accompanied by an improvement in the mental state in 9 (5 with sinusitis)—viz., 3 manic-depressives (1 with sinusitis), 1 hebephrenic (without sinusitis), 4 toxic-exhaustives (3 with sinusitis), and 1 epileptic (with sinusitis). In the 8 cases with sinusitis and tonsillitis, of whom 5 improved as a result of treatment, it is impossible to say how much of the improvement was due to the tonsillectomy. In the other 4 cases which improved as a result of tonsillectomy, the impression gained was that, while in none of the cases was toxæmia from a tonsillar focus the primary cause of the psychosis, it was probably contributory in all, and the tonsillectomy at least hastened the rate of recovery. In all 4 the tonsils were frankly septic, and the 2 manic-depressives themselves dated their improvement from the operation. Neither of the puerperal cases responded to this treatment.

COMMENTARY

Some explanation seems to be called for to account for the grave discrepancy in the relative importance ascribed to sinusitis as a cause of mental disorder by the Birmingham and Cardiff schools of workers. When it is appreciated that at Birmingham sinusitis is found in over 80 per cent. of the patients, while at Cardiff only 24 cases were found in 807 consecutive admissions—i.e., 3 per cent.—it appears that the primary difference must lie in what is to be regarded as sinusitis. Even in the 51 carefully selected cases subjected to proof puncture at Cardiff, only 24—i.e., 47 per cent.—showed sinusitis. At Cardiff it is felt to be quite unjustifiable to diagnose sinusitis merely on the ability to culture a few organisms from sinus washings. It is highly probable that healthy controls would approximate very closely to psychotics in this respect.

Secondly, even if it be provisionally granted that the isolation of a few organisms from the nasal sinuses is proof of infection, this does not seem to warrant the further assumption that such infections should necessarily be regarded as a contributory factor in any psychosis present. The ground on which Birmingham and Cardiff certainly do agree is that in the case of overt sinusitis correction of this condition is imperative, as there appears little room for doubt that in an appreciable proportion of such cases definite improvement results from treatment.

It appears to me that investigation of the kind under discussion must be carried out in a highly critical manner. The work must be regarded as still in the experimental stage, and the interpretation of results as controversial; and it would be unfortunate if extravagant claims should bring into disrepute what appears to be a hopeful method of attack on the psychoses. My summing-up of the position is that infection of the nasal sinuses and tonsils is an important causal factor in a small minority of psychotics, that its eradication in these cases leads to cure or amelioration, and that it should always be looked for and treated vigorously when present. Especial emphasis should be laid on the importance of these infections in the toxic exhaustive psychoses, since here they appear to be comparatively common and frequently causal.

The rhinolaryngeal and bacteriological investigations were carried out by Mr. A. A. Prichard and Dr. H. A. Scholberg, consulting rhinolaryngologist and pathologist respectively to Cardiff City Mental Hospital.

THE SERUM TREATMENT OF HODGKIN'S DISEASE

WITH AN ACCOUNT OF FOUR CASES TREATED

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As a result of the publication by Utz and Keatinge[1] of a new form of treatment for lymphadenoma and their request for a further trial of the method, four cases of this disease have been treated in St. Thomas's Hospital on the lines laid down by them.

The technique used was briefly as follows. A fresh portion of gland, removed from the patient and kept bacteriologically clean, was emulsified in a small quantity of normal saline and injected subcutaneously into the leg of a chicken. After ten days the chicken was bled and serum was prepared, subsequent bleedings being done at weekly or fortnightly intervals; the details of the technique as well as the administration and dosage of serum to the patients were exactly as described in the above article.

It is not proposed to give the references to other forms of treatment in lymphadenoma, as these are given in full by Utz and Keatinge; no subsequent publications, up to March, 1933, of a similar form of treatment have been found. The procedure detailed by these authors was suggested to them by the work of Elise l'Espérance on the ætiology of lymphadenoma, in which evidence was produced to show that it was a form of avian tuberculosis. It is interesting to note in view of this fact that the autopsy on the chicken of Case 1, which died under anæsthetic one month after inoculation of gland emulsion, revealed no abnormality either at the site of injection or elsewhere in the body, and that sections of liver, spleen, bone-marrow, and lung appeared to be quite normal microscopically. Further, an attempt to confirm the results of l'Espérance by C. E. van Rooyen[3] has failed to show any evidence of avian tuberculosis in lymphadenomatous material.

CASE RECORDS

CASE 1.—Female, aged 27. In November, 1931, the patient first noticed a small tumour above her left clavicle. She was given a course of X rays to the mass but it grew steadily larger and in February, 1932, she was admitted to St. Thomas's Hospital. At that time the swelling was about the size of a small orange and a biopsy was done to establish a diagnosis. A gland was removed from the posterior triangle of the neck and on section this presented the typical appearances of lymphadenoma. At that time there were no other signs of the disease.

In the following month the mass had increased so much in size that the trachea was displaced to the right, and a further course of X rays was advised. At first there was little improvement, but subsequently the mass almost disappeared and the patient left the hospital in good health. There was no change until July, when it was noticed that dyspnœa prevented the patient from doing her work, and a radiogram of the thorax showed considerable enlargement of the mediastinal glands. She was readmitted to the hospital where further examination revealed a loss of weight and a poor general condition. Lymph glands elsewhere in the body were not enlarged, but the temperature was raised and remained at about 100° F. *There were no other physical signs* apart from the fact that a blood count showed a moderate degree of secondary anæmia.

At this stage it was decided to try the results of a course of chicken serum. A gland was removed and an emulsion prepared and inoculated into a chicken. The serum was taken at regular intervals from this chicken and given in increasing doses to the patient. At the second injection the patient experienced a very severe local and general response, while shortly afterwards an extensive thrombosis of the veins of the arm occurred. The treatment was started in November and continued until the middle of February. Throughout this period the local and general state became progressively worse and the serum had little result except that it made the patient more uncomfortable. Towards the end the mediastinal glands developed so rapidly that a further course of X rays was tried in the hope of relieving the symptoms. After this the treatment was symptomatic and the patient died in May.

CASE 2.—Female, aged 26. This patient first noticed a lump in the neck in January, 1932. Some months later she visited her doctor who prescribed a mixture of iron and *arsenic; the tumour however did not respond to this* treatment and the patient came to the hospital in October, '932. On admission the glands on both sides of the k were enlarged and radiography of the thorax showed the mediastinum was also involved. There was a t slight pyrexia. In the abdomen the spleen palpable, but apart from this there were no other gns. The blood count was normal. A biopsy d and the "quick smear" made from the gland removed was typical of lymphadenoma. A *therefore inoculated at once and a course of* tarted. The first injection was given on nd the treatment continued twice a week d. The patient did not react to the treatment and the lymph glands increased steadily ventually the mediastinal glands produced and a short course of X rays was given in to relieve the symptoms. She died shortly

-Boy, aged 4½. The child was admitted to l *in February, 1931, suffering from cervical* three months' duration. No cause for the lands was found and a biopsy was done to he diagnosis. A report of lymphadenoma was nd the child was sent to a convalescent home. ry, 1932, he was again admitted for cervical nd on this occasion it was found that the liver en were slightly enlarged. There were no other signs at that time. A course of X rays was d and the child made such good progress that by t, 1932, *the glands had disappeared* and the weight increasing rapidly. In August however he became denly extremely ill and was brought to hospital for mediate admission. *The temperature* was 103° F., respirations 40, and the pulse 150. There was marked wasting and the child vomited continuously. The glands on both sides of the neck were enlarged, and although no other glands were palpable the abdomen was distended and the liver and spleen could be felt. A blood count at the time showed an extraordinary degree of anæmia and the hæmoglobin was as low as 25 per cent.

In the circumstances it was not thought advisable to remove a gland, and the serum from a chicken which had already been inoculated was used. A fortnight later, after three injections, there was a startling improvement in the general condition. The temperature gradually fell to normal and the hæmoglobin of the blood rose to 50 per cent. The progress was maintained until, a short time afterwards, the child was sufficiently recovered to get about the ward. The improvement continued for four weeks; then a relapse occurred and all the old signs returned in an aggravated form. Finally, the child developed pneumonia and died a month later.

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It is interesting to note that on one occasion when a blood count was done there were 30 per cent. of eosinophils present in the blood, and on the following day the figure had fallen to normal again. The child had received large doses of serum from shortly after the day of admission until the time of his death, and it must be recorded that on several occasions severe attacks of anaphylaxis, which necessitated the immediate use of atropine and adrenaline, resulted from these injections. At autopsy very extensive *involvement of all the lymphatics in the thorax* and abdomen was found, while the spleen and liver were also invaded.

CASE 4.—Male, aged 10. Twelve months before admission to hospital a swelling had appeared on the right side of the neck. The patient was taken to hospital where a gland was removed and a diagnosis of lymphadenoma was made. He had no further treatment for a year. On admission to St. Thomas's Hospital there were no physical signs of lymphadenoma apart from the enlarged cervical glands. *The general condition* was excellent. In September, 1932, another biopsy was done which confirmed the diagnosis and a chicken was inoculated with an emulsion of the gland. After the first few doses of serum the glands became definitely softer and more discrete, but the total neck measurement remained the same. A single dose of X rays was then given, following which the neck measurement fell from 14 in. on Jan. 3rd to 12¾ in. on Feb. 15th, but subsequently the glands enlarged again, and on June 5th the measurement had *returned to 14 in. From this date until the end of July,* 1933, the patient had regular injections of serum. In May, 1933, a second gland was removed and a fresh chicken was used, and on this occasion the gland was placed in the subcutaneous tissues of the chicken.

During the whole course of treatment the general condition of the patient remained excellent, and although there was often a brisk local reaction to the injections, these did not appear to influence the condition of the glands at all. At the end of this period the glands had increased considerably in size and as the injections did not appear to have controlled the advance of the disease the treatment was given up.

DISCUSSION

A study of these four cases reveals no evidence that the treatment with chicken serum was of any avail or that the disease was controlled in any way. In two of the patients the disease was certainly advanced when treatment was started, but in the others it may be said to have had a fair trial.

It may be argued that the number of cases is too small for an opinion to be formed, but the treatment in these has at least been thorough and the results are not sufficiently encouraging to continue. Nevertheless we have thought them worthy of publication in view of the successes which have been claimed by other workers; for lymphadenoma is a disease which is still incurable and others may be tempted to rely on this form of treatment and to regard it as offering hopes of cure.

It will be seen that in the third case there was a remarkable improvement in the general condition shortly after the injections had been started and it was hoped that this might be due to the treatment. This hope was based on the fact that there had been a corresponding improvement in the anæmia which has been emphasised as one of the earliest signs of benefit. The subsequent relapse however and the fatal termination of the disease shortly afterwards removed these hopes, and it became apparent that this was merely one of the usual *periods of remission* which characterise the course of lymphadenoma. As to the lymphatic glands it can be stated that *in these cases there was no diminution in size* noted, and in Case 4, where a second gland was removed after the patient had had treatment for several *months, the sections showed a very active* type of lymphadenoma with little or no fibrosis.

Finally, the injection of a foreign serum into patients is not without danger, and even in these cases it will be seen that, quite apart from the brisk local and general reaction which sometimes occurred as the dose was increased, other complications arose. In the first case an extensive thrombosis of the veins of the arm caused the patient much pain and discomfort, and in the third the attacks of anaphylaxis were sufficiently serious to be an immediate danger to life.

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TREATMENT OF LYMPHADENOMA WITH CHICKEN SERUM

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The grave prognosis of lymphadenoma when treated by any known method is sufficient excuse for the following brief account of the treatment of five cases by the injection of chicken serum, as suggested recently by L. Utz and L. Keatinge.[1]

The method of these authors was based on a certain hypothesis of the ætiology of the disease—namely, that it was due to infection by avian tuberculosis. There are many reasons to doubt this hypothesis; moreover, if it were correct, treatment by an immune serum would not, on the analogy of other tuberculous disorders, be likely to be of value. There are, however, many examples of successful therapy based on fallacious theories, and the claims of the authors above-mentioned encouraged a trial of their methods.

Their methods were deliberately modified in one respect; while fresh lymphadenomatous glands were introduced into the chickens subcutaneously, as they described, the serum was not used in its natural state after removal of the clot. Such sera were found frequently to be contaminated by a staphylococcus, and the risk of infection is great. There are many cases on record of fatal infections, notably in Australia, after the injection of therapeutic sera without an antiseptic. The serum was therefore diluted after collection with an equal volume of 0·5 per cent. phenol in saline and filtered through a Seitz filter. While this modification is, naturally, to be considered in relation to the results, it should be mentioned that it would not materially affect the efficiency of any other therapeutic sera, all of which, in this country, contain a small quantity of antiseptic. The patients were injected at intervals of seven days, and the chickens were bled at intervals as required. None of the chickens suffered in health as a result of their treatment, and all were later killed when they showed no evidence of disease.

In their description of the reactions of patients, Utz and Keatinge remark on the fact that those which gave general reactions appeared to improve most. It is to be anticipated that any patient subjected to frequent injections of a foreign serum would become sensitised, and in fact four of the five cases in varying degree gave sensitisation reactions. These varied from acute attacks of asthma, and in one case a serious collapse, to urticaria; and it is surprising that all the patients do not suffer dangerous reactions. Chicken serum does not appear to be, at least in these cases, as effective a sensitising reagent as horse serum.

Without exception, the cases either had been treated, or were simultaneously treated, by deep X rays. This was also true of the cases in the original paper.

The results were disappointing. One patient suffered such severe reactions after the second dose that he discontinued treatment. Another died in the course of treatment after suffering severely from joint effusions probably due to the serum. Three patients continue under treatment. Of these, one is also regularly receiving X ray therapy; he remains in statu quo; and there was an exacerbation of glandular enlargement during treatment by serum. Another had extensive X ray treatment before the serum treatment began; his glands have shown the alternating enlargement and shrinking characteristic of the disease. The third, who has had no X ray treatment during the serum therapy, was treated by a physician outside London with serum prepared at Westminster Hospital. He states that the glands became much smaller under serum treatment, but on his return to London after three months they were as large as when he left hospital, and the physician had refused further treatment owing to the patient's complete collapse after the last dose given.

The progress of these patients does not appear to have differed from what might have been anticipated in the absence of serum therapy, apart from the serum-sensitivity developed. It should be stated that all the patients claimed to feel better after the injections, including the fatal case. This, however, should be discounted, for all the patients were aware of the gravity of their condition.

The series is a very small one and must be correlated with those reported by other workers. As, however, it included both early and late cases, some more definite improvement might have been expected if this method of treatment were of serious value. The results, in fact, offer no support for a therapy based on an hypothesis which is unconfirmed, and at first sight illogical even if the hypothesis were confirmed; and no further cases are being treated in this way at the Westminster Hospital.

HISTORIES

Case 1.—Man, aged 37, veterinary surgeon. Onset with pruritus one year before treatment began. This had continued up to the time of initiation of treatment, when a generalised enlargement of lymph glands was first noticed. The spleen and liver were not enlarged. X ray examination showed that the mediastinal glands were grossly enlarged. There was slight secondary anæmia, which became progressively worse up to the time of death. A gland was removed and showed typical lymphadenoma, eosinophil cells and "Dorothy Reed" giant cells being prominent. A chicken was inoculated with gland tissue, and the patient received injections of this chicken's serum weekly until a fortnight before his death. He also received deep X ray treatment. He developed an urticarial rash after the fourth injection, and later complained of what appeared to be typical attacks of asthma at night, sometimes of great severity. Later still he developed effusions into his knees and both ankles. He also suffered from acute pain related to the ribs, which showed no X ray changes. A pleural effusion developed on this side; the deposit showed lymphocytes only. The anæmia increased, and just before death he showed 2,000,000 red cells, with 40 per cent. of hæmoglobin, and 5000 white cells, of which 83 per cent. were polymorphs, 2 per cent. eosinophils, 12 per cent. lymphocytes, and 3 per cent. monocytes. He became rapidly worse, and after suffering severely from a profuse watery secretion from the nose died in coma almost exactly a year after treatment began. In this case no benefit appeared to follow treatment, and the serum reactions included urticaria, asthma, joint effusions, and possibly also rhinorrhœa. Post-mortem examination was refused.

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[1] Med. Jour. Australia, 1932, i., 521.

CASE 2.—Man, aged 52, cable layer. Enlarged glands of neck for three years. Treated without biopsy with X rays for lymphadenoma; hæmoptysis after fourth application. *Gland excised at Sussex County Hospital.* Diagnosis: "On the whole probably lymphadenomatous." Clinically now diagnosed as tuberculous. Sputum negative for tubercle bacilli. Wassermann reaction negative. Gland excised at Westminster Hospital showed typical lymphadenoma; fibrosis was present, and the condition was fairly advanced. Blood count normal. X ray examination showed marked mediastinal enlargement of glands. A serum was prepared from a chicken and injected at weekly intervals for seven months. No other treatment was given. *The glands at first became noticeably smaller* and more discrete, but later a fresh crop appeared in the posterior triangle on both sides. Serum reactions did not develop. Patient clinically remains in statu quo; states that he feels much better.

CASE 3.—Man, aged 35, manager. Six months' history of pruritus; marked generalised enlargement of lymph glands, including mediastinal. Spleen enlarged; no anæmia; short of breath. Gland excised; typical early lymphadenoma. Serum prepared; the first dose caused no symptoms. Repeated in 7 days; very severe attack of "asthma"; collapse; revived with adrenaline and atropine. Repeated in 14 days; result similar. Patient refused further treatment.

CASE 4.—Man, aged 35, tool-maker. Two years' history of "lump in neck." A large tumour occupied the whole of the left posterior triangle. It was completely removed, and involved the sheaths of the external carotid artery and internal jugular vein, the base of the skull, and the transverse processes of the cervical vertebræ. Histologically lymphadenoma; fibrosis marked. Deep X ray therapy. Returned in six months for serum therapy; involvement of lymphatic glands everywhere. Serum prepared and administered weekly for six months; X rays were stopped. General reactions of increasing severity culminating in a dangerous collapse, after which patient's doctor, who had been administering serum, refused to give any more. Patient when seen was in statu quo; in fact, the original large mass had returned. Stated he believed treatment had done him good and that relapse was due to its cessation.

CASE 5.—Man, aged 33, clerk. Three years' history of pruritus of both forearms, buttocks (but not anus), and both lower limbs, the palms of the hands, and soles of the feet. Not trunk or face. One and a half years' history of glandular enlargement, first noted in right axilla, and since spreading widely. General health good until just before appearance of glands; since then has had shortness of breath, night sweats, and well-marked Pel-Ebstein temperature. There is a strong family history of tuberculosis. Treatment has been by X rays and also by chicken serum, prepared from an excised gland which showed typical lymphadenoma with giant cells and eosinophils. He has had regular weekly injections of varying amount. His general state is quite good, and there is no anæmia. The glands have increased and diminished in size many times while under observation. He has shown several typical attacks of urticaria caused by the serum, but no severe reactions. At the time of writing mediastinal and general enlargement of glands is quite definite, though not extreme, and the patient does not seem to have benefited by the serum treatment.

In addition, two other cases were treated; in one case the patient did not return for treatment after one or two doses; the second died after three doses.

My thanks are due to Dr. Arnold Stott, Dr. B. H. Jones, Mr. Tudor Edwards, and Mr. C. P. Thomas for the facilities afforded by them.

CARBOHYDRATE METABOLISM IN CASES OF UNEXPLAINED MISCARRIAGES

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ALL gynæcologists are familiar with the patient whose sole complaint is the occurrence of frequent miscarriages for which no cause can be found. This paper is an account of an investigation into the carbohydrate metabolism of these women. The series includes cases referred to the biochemical department not only by the gynæcological department of the hospital but also by outside gynæcologists.

The women studied form a consecutive series of cases sent for investigation during the last three years. All the patients had been examined previously by a competent gynæcologist, and no medical or gynæcological cause found to explain their inability to go to term and have live infants. Before inclusion in the series a further examination was made which included a repeated Wassermann and Kahn test, blood-urea estimation, and a complete examination of a 24-hourly specimen of urine. If no abnormality was discovered the case was included in the series, which therefore includes all cases of unexplained miscarriage investigated during the period mentioned. The patients were on the whole healthy looking women of average weight, whose appearance did not suggest any innate weakness, nor for that matter any abnormality of carbohydrate metabolism, the investigation being undertaken on purely theoretical grounds.

Many of the patients studied reported to hospital in early pregnancy, as, owing to their past history, they were anxious to know that all was normal and to avoid another miscarriage. Others came up because they were anxious to have a further pregnancy if there was a chance of a living child. The cases were therefore grouped according to whether they were pregnant or non-pregnant when examined. Further, the pregnant cases were studied throughout pregnancy and after delivery, so are subgrouped with reference to their stage of pregnancy.

METHODS

The glucose-tolerance test was carried out in the morning. The patients were allowed a cup of tea (without sugar) and one piece of toast four hours before the meal was started; this was arranged as many of the women had some distance to come. 100 g. glucose were given in half a pint of water and samples of blood for sugar estimation collected for the next two and a half hours; the samples were taken every quarter of an hour for the first hour, and then half-hourly for one and a half hours. The blood-sugar was estimated by the method of Hagedorn and Jensen. The urine was collected at the end of the first and second hours of the test, measured, and the total sugar leak estimated.

PREGNANT SERIES

This series includes 19 cases, all of whom had had more than two miscarriages or premature stillbirths (average 3·2) and no live infants. Of these patients, ten reported before the end of the third month of pregnancy. The ages of the women varied from 23 to 40 years.

The blood-sugar curves of these patients were most striking. The majority were very raised, and showed an exaggeration of the delayed fall, characteristic of sugar curves in pregnancy. Details of five of the

TABLE I.—PREGNANT SERIES

1–5 Months, 6–9 Months, and Post-confinement

Case.	Age.	Miscarriages or stillbirths.	24-hourly urine.	Blood-urea mg. per 100 c.cm.	Height.	Weight in pounds.	Result of confinement.	Blood-sugar after 100 g. glucose in mg. per 100 c.cm. blood.												
								Duration of pregnancy.	Resting value	Time in hours.							Urine-sugar.			
										¼	½	¾	1	1½	2	2½	1st hour		2nd hour	
																	Percentage total mg.			
1	38	2	N.A.D.	25	..	..	F.T.I. weighed 7 lb. 12 oz.	27 wks.	142	196	234	234	201	201	192	196	..	..	0·8	0·2
								35 „	75	128	157	164	155	200	174	155	..	..	0	..
2	38	3	„	26·5	5′ 3″	112	F.T.I. 8 lb. 1 oz.	7 „	103	192	192	170	161	147	143	103	0·54	..	..	..
								15 „	99	202	231	236	221	202	179	143	2·8	5·6	6·4	10·2
								38 „	116	111	129	192	192	183	170	120	0·6	2·1	3·7	1·8
								Post 2 „	94	196	224	234	240	258	224	205	0·4	1·4	1·1	2·5
								5 „	94	192	211	192	179	143	147	143	0·2	1·0	0·25	0·1
3	..	2	„	43	4′ 11″	110	F.T.I. 5 lb. 13 oz.	36 „	86	107	143	189	208	208	189	170	0·8	..	2·0	..
								5 days.	86	144	199	237	232	242	222	175	0	..	0	..
								5 wks.	89	178	215	224	224	160	124	115	0	..	0	..
								Post 5 mths.	81	161	217	226	207	152	152	160	0	..	0	..
								3½ yrs.	93	185	155	155	164	146	146	146	0	..	0	..
4	23	2	„	28	..	..	Miscarriage.	10 wks.	99	116	143	161	179	161	152	170	0	..	0	..
5	28	5	„	16	..	..	?	32 „	89	115	151	160	178	160	133	124	0	..	0	..
	Aver.	3·2						Aver. for 1-5 mths.	100	153	186·1	186	188	179	170	147				
								Aver. for 6-9 mths.	95·7	141·6	183	208·3	207·7	201·5	179·7	143·8				

patients are set out in Table I. The curves are shown in Chart 1 and for purposes of comparison. Similar curves obtained from normal women during normal pregnancy (E. C. Pillman Williams and Lucy Wills [1]) are also shown. The results obtained during the one to five months of pregnancy and the latter months of pregnancy were averaged separately. It will be seen that not only are both curves much raised, and the return to normal fasting levels delayed, but the relative lowering of the curve which normally takes place during the second half of pregnancy is absent.

As stated before, no sugar was detected in the 24-hourly specimens of these patients while on their ordinary diets. After 100 g. of glucose, however, 13 leaked sugar in amounts varying from a trace to 15·8 g. total output, the average total sugar output being 4·4 g. in the two and a half hours. The figures have therefore also been analysed with reference to the presence or absence of sugar leak after the test dose of glucose. In Chart 2 the average curves for both groups are shown in comparison with values obtained in a study of normal pregnancy where a certain number of cases also leak sugar. In comparison with the normal, both types of case in the present series have raised blood-sugar curves. However classified, therefore, the curves for this group of women (miscarriage series) are on a definitely higher level than those obtained from normal pregnant women.

Post-confinement the blood-sugar curves (Chart 3) after 100 g. of glucose still remained high, but in

TABLE II.—NON-PREGNANT SERIES

Case.	Age.	Misc., abort., or prem. births.	24-hourly urine.	Blood-urea mg. per 100 c.cm.	Height.	Weight in pounds.	Result of subsequent confinement.	Blood-sugar after 100 g. glucose in mg. per 100 c.cm. blood.												
								Period of diet.	Resting value	Time in hours.							Urine-sugar.			
										¼	½	¾	1	1½	2	2½	1st hour		2nd hour	
																	Percentage total mg.			
30	30	2	N.A.D.	30	5′ 1″	103	P., 7½ months. Lived 10 days.	..	80	129	151	142	147	124	115	112	0	0	0	0
31	38	3	„	24	5′ 2″	116	P., live birth.	..	116	179	236	256	188	198	161	..	0·2	0·65	Tr.	0
32	25	4	„	28	..	..	..	..	111	147	187	196	160	147	169	159	0	0	0	0
33	18	2	„	26	5′ 6″	170	..	..	133	196	229	214	201	142	188	134	0	0	0	0
34	30	2	„	16·5	5′ 4″	126	P., live birth.	..	81	217	256	236	207	125	134	116	0·5	1·0	0	0
							F.T., live birth.	3 weeks.	98	170	198	170	143	125	125	107	0	0	0	0
35	38	1 P. 4 M.	„	20	5′ 5″	119	..	..	115	192	196	205	192	170	183	111	0	0	0	0
	Aver.	3·16																		
								Average for first visit of the 19 patients—	105	169	205	213·1	196	163	157	128·4				
								Average for 5 dieted cases—	106·5	159	184	184	183·1	151	150	133				

F.T.I. = Full-term infant. P. = Premature. M. = Miscarriage.

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[1] Quart. Jour. Med., 1929, xxii., 493.

certain cases where the glucose-tolerance test was repeated 5–12 months later the curves were lower and the sugar leak was reduced, and in some cases had ceased altogether; but it must be remembered that these patients had been treated during and after their pregnancy.

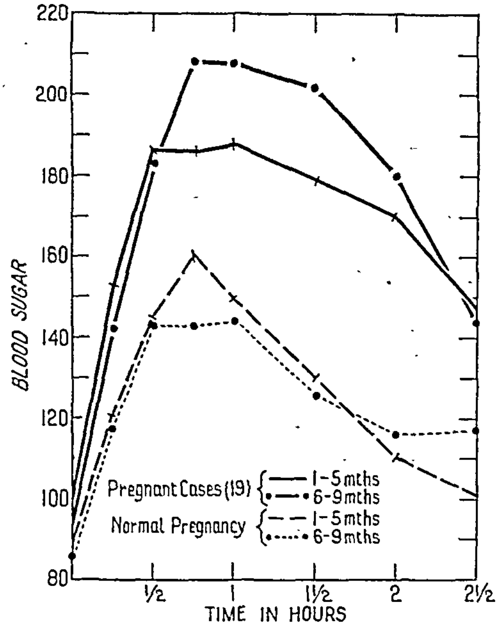

CHART 1.—Average blood-sugar curves of pregnant women with history of miscarriage and of control cases during normal pregnancy. (In this and other charts the ordinates represent mg. per 100 c.cm.)

Three cases followed from two and a half to three and a half years, with no intervening pregnancy, showed this lowering very distinctly, and their sugar curves became practically normal in type. However, a large enough number of post-pregnant women have not been investigated to enable generalisations to be made as to whether this fall would occur in all cases.

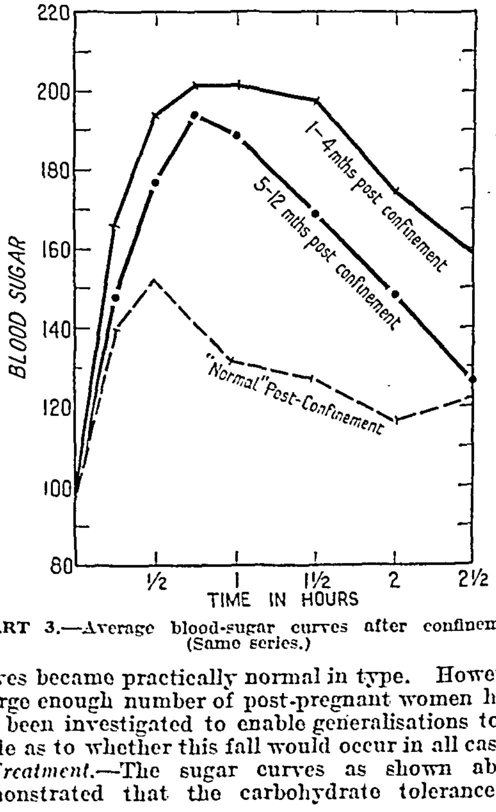

CHART 3.—Average blood-sugar curves after confinement. (Same series.)

Treatment.—The sugar curves as shown above demonstrated that the carbohydrate tolerance of these patients was reduced. This series of patients were advised to diet. Their carbohydrate was, therefore, so spaced that instead of the customary three large meals a day, six smaller meals were taken.

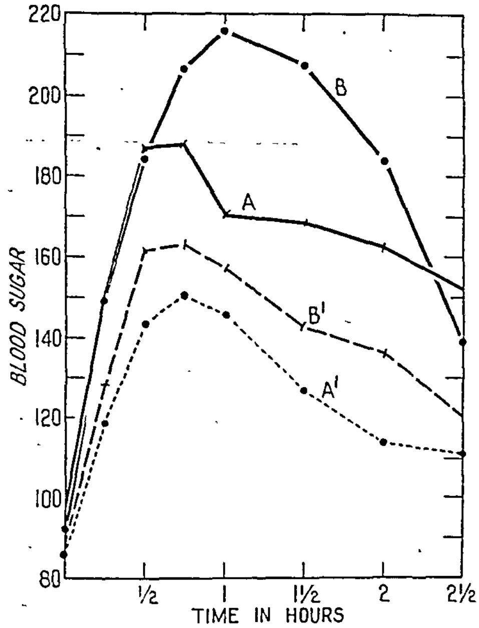

CHART 2.—Average blood-sugar curves of same series after 100 g. of glucose, classified according to presence or absence of sugar leak.

The total carbohydrate intake was not unduly reduced, the amount given was 150–200 g. a day, taken in rations of 30 g. at approximately three-hourly intervals. All patients did well on this régime only (with two exceptions discussed below), and their blood-sugars, taken after meals, were always within normal limits. These women were treated as out-patients and were able to live their normal lives. Most of them kept to their diet well, but with a few it was difficult to do so owing to their domestic arrangements.

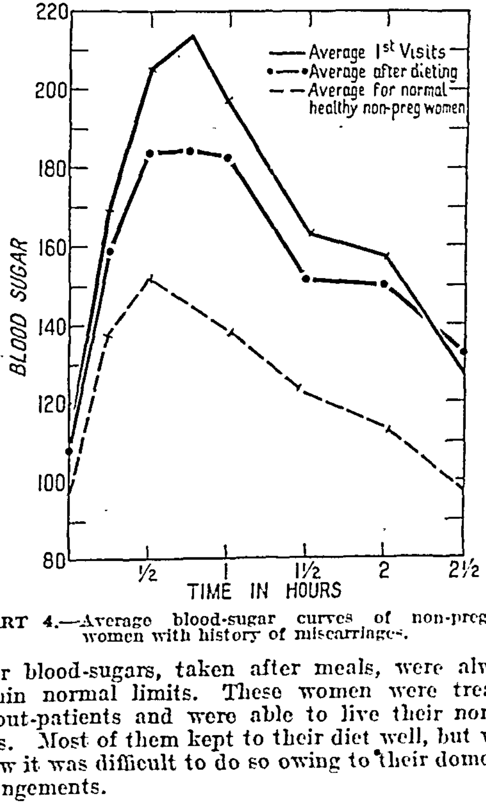

CHART 4.—Average blood-sugar curves of non-pregnant women with history of miscarriages.

Two patients of this series, in addition to diet, were treated with small doses of insulin. One of these became acidosed as she failed to carry out instructions and reduced her carbohydrate too much. She was admitted, and as her blood-sugar values on a balanced diet were high, she was given 5 units of insulin twice daily. This patient was of a low mental type, but in hospital she did well and remained acetone-free and had only occasional traces of sugar; later she was delivered of a full-term living child. The insulin was gradually reduced after confinement, and she was discharged on diet only. The other patient was one that for psychological reasons it was considered necessary to treat more actively. She was on insulin 3 units twice daily for five months, her blood-sugar levels fell, and the insulin was finally stopped some little time before she was delivered of a live child.

Previously none of these women had ever had a full-term living child, but on the other hand had an average of 3·2 miscarriages each. After supervising these pregnancies, 11 had living full-term infants, one had a premature infant, two aborted, three had miscarriages, in one the result is unknown, and one other has yet to be delivered.

NON-PREGNANT SERIES

This series consisted of 20 non-pregnant women, all of whom had had several miscarriages (average 3·16) and nearly all of whom came with a view to securing a living child. As many came from country districts it was impossible to get them to come back again to report, so that the number of cases followed through is limited.

The sugar curves of these patients, with two exceptions, all showed some definite departure from the normal. The average of these curves is shown in Chart 4, where it is seen in comparison with the normal curve for non-pregnant women, and the actual figures of five cases are shown in Table II. In 14 cases the blood-sugar curves were high; in seven of these the initial fasting values were above normal, and with one exception the curves all showed a markedly delayed fall. Four other cases had curves which did not rise above the normal value but which showed the same definite delayed fall. Two cases only had normal sugar-tolerance curves. Seven of this series leaked small amounts of sugar (average output 0·7 g. approx.) after the test dose of glucose.

Unfortunately, as stated above, it was possible to follow only a few of these cases. Nine reported after a course of treatment, and out of this number five were pregnant and have been considered in the previous list. The four cases that did not become pregnant showed little improvement as judged by their sugar-tolerance curves (Chart 4). These curves still remained abnormally high although actually there was a slight lowering of the average findings. Three of these cases before dieting had leaked sugar after the test dose of 100 g. of glucose, but after the course of diet did not leak when the tolerance test was repeated; in all three cases the blood-sugar curves were on a lower level.

DISCUSSION

Attention was drawn to this problem on account of the large number of women sent to the laboratory who clinically had no abnormality to account for their frequent miscarriages. The Wassermann and Kahn tests and tests of renal function, including an examination of a 24-hourly specimen, did not help, as in all these cases the results were within normal limits, and there seemed no obvious explanation of their liability to miscarriage.

From a large experience of the toxæmias of pregnancy it had been realised that a very considerable percentage of such cases are related not to any failure of nitrogen metabolism, but to gross errors in carbohydrate metabolism, a fact which is frequently not sufficiently appreciated. This was the starting point of the investigation.

As stated above, on an ordinary diet the patients did not leak sugar, and their fasting blood-sugars were either normal or only very moderately raised. The glucose-tolerance test, however, indicates a definite reduction in carbohydrate tolerance which improved under treatment. The reduction of carbohydrate tolerance was observed not only during pregnancy but also when the women had not been pregnant for some time. This suggests that the reduction is the result of a general condition, and not one merely related to pregnancy. The underlying cause is probably related to a lack of balance of ductless glands, but the complexity of the hormone control of the sexual cycle in women makes speculation unrelated to experiment of small value. But with a view to other lines of treatment, the relation (shown by W. E. Dixon [2]) of the posterior pituitary to carbohydrate intolerance and hypersensitiveness of plain muscle and the inhibiting effect of corpus luteum must be borne in mind.

CONCLUSIONS

1. A series of cases of repeated miscarriage without any obvious physical basis have been subjected to glucose-tolerance test.
2. A lowered tolerance for glucose was found in 90 per cent. of the cases.

I have to thank Prof. Louise McIlroy and the staff of the gynæcological unit, and Dr. Gertrude Dearnley, of the Royal Free Hospital, for sending cases for investigation.

MONTHLY PERIODICITY IN EPILEPSY

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It is well known that in certain cases of epilepsy in women there is an association between the periodicity of the menstrual cycle and the occurrence of fits, which may coincide with the monthly period, leaving the intervening weeks free. A girl under observation for some years illustrates this well. Her fits occurred in groups of major fits and myoclonic attacks quite irregularly till about a year before the onset of menstruation, when a definite tendency to periodicity appeared. Now her fits start just before or at the beginning of the monthly period and continue over about ten days, then she is free till the next cycle.

A similar monthly cycle of groups of fits has been noted in three male patients, well marked in a boy of 11 and in a man of 40, rather less definite in a man of 20 years old. In these cases fits occur over a period of four to ten days, with the onset about the same time in each month, leaving free intervals of about three weeks. These three cases have in common some abnormality of sexual development, with obesity and the assumption of some feminine characteristics.

CASES

Case 1.—Girl, aged 16. Family history of heavy drinking in father and paternal grandfather, and uncle has been in a mental hospital. The first fit occurred at the age of 5. On admission at the age of 7 she showed no physical abnormality, but was under average height. Major fits and myoclonic attacks occurred in irregular groups till June, 1929, when a monthly incidence began to be noticeable. Menstruation started in September, 1930, with a cycle of about 30 days. The fits now begin about the onset of the period and last about ten days. She is a stocky, plump girl, height 5 ft. 4½ in., weight 8 st. 6 lb.; the head is square and flat topped. The breasts and pubic and axillary hair are well developed. She shows no physical abnormality.

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[2] Brit. Med. Jour., 1927, ii., 1070.

Glucose-tolerance test: fasting blood-sugar, 0·056 mg. per 100 c.cm.; half an hour after 50 g. glucose, 0·08 mg.; one hour after, 0·098 mg.; two hours after, 0·095 mg. Serum calcium ranges from 7 to 10·5 mg. Ca per 100 c.cm.; serum phosphorus from 3 to 5 mg. per 100 c.cm. Urine is normal, specific gravity 1025, no polyuria or polydipsia. Radiography of the skull shows a rather small sella with prominent clinoid processes almost bridging the fossa.

The fit incidence during six months was: August 19th–30th; *Sept. 17th–27th*; Oct. 10th–20th; Nov. 18th–28th; Dec. 24th–Jan. 1st; Jan. 31st–Feb. 10th.

CASE 2.—Boy, aged 11. The father had fits as a child and a paternal uncle is epileptic. Two brothers died soon after birth. Patient had convulsions during teething; the first fit was at two years of age. The fits now occur in groups of major and minor attacks lasting over several days, each group beginning about the middle of the month, the intervening weeks being free of fits. He is a chubby fat boy, 4 ft. 5 in. in height, and weighing 6 st. 5 lb. He is square-headed and stocky. The obesity is general, the skin is *soft and moist*. The *testicles are small*; the left testicle is descended, but the right, though palpable, is undescended. Otherwise there is nothing abnormal.

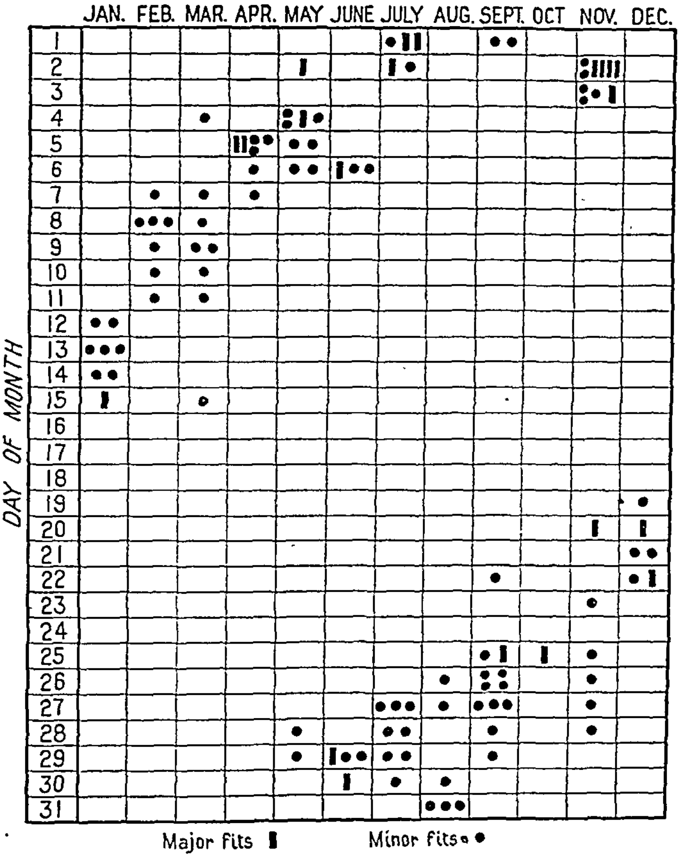

Chart showing incidence of fits in a boy aged 11 (Case 2).

Glucose-tolerance test: fasting blood-sugar, 0·064 mg.; half an hour after 50 g. glucose, 0·174 mg.; one hour after, 0·094 mg.; one and a half hours after, 0·108 mg.; two hours after, 0·076 mg. Urine specific gravity 1036, trace of sugar present. Serum calcium varies between 8·4 and 10·9 mg. per 100 c.cm.; serum phosphorus from 3·12 to 6·6 mg. Radiography of the skull shows a large head with thick bone; the sella turcica is small but well formed.

The recent monthly fit incidence has been: Sept. 22nd–28th; Oct. 25th–Nov. 3rd; Nov. 20th–28th; Dec. 19th–22nd; Jan. 16th–20th; Feb. 13th–20th; March 16th–20th; *April 14th–23rd*; *May 11th–15th*.

CASE 3.—Man, aged 40. Family history negative. His first fit was in the Army, due to "shell-shock." For years his fits have shown a monthly incidence of short groups *of one or two major fits followed by minor fits* and sensations over a period of three or four days, with free intervals. He is a short solidly built man with a square head. His height is 5 ft. 6 in., and weight 13 st. 4 lb. *The fat* is mainly disposed on the trunk. There is marked gynæcomastia, with large nipples. On the left side he has an accessory nipple, and a mole below it in the nipple line. The testicles are very small, descended; there have been no emissions for years.

Glucose-tolerance test: fasting blood-sugar, 0·06 mg.; half an hour after 50 g. glucose, 0·11 mg.; one hour after, 0·176 mg.; two hours after, 0·096 mg. Urine has a sp. gr. of 1021, with slight glycosuria; no polydipsia or polyuria. Serum calcium, 9·4 mg. per 100 c.cm.; serum phosphorus, 3·4 mg. Radiography shows a very thick skull with a small shallow pituitary fossa. The posterior clinoids are thick, with some appearance of bridging.

The recent fit incidence has been: Sept. 30th–Oct. 4th; Oct. 26th–31st; Nov. 27th–Dec. 1st; Jan. 3rd–7th; Feb. 15th–23rd.

CASE 4.—Male, aged 20. A maternal uncle is epileptic. An instrumental birth was said to be followed by a dent on the head noticeable for three to four years. The first fit was at the age of 9 years. He was intelligent and did well at school. Fits were in irregular groups till 1930, *since* when he has had runs of four to eight major fits in 36 hours. He has two or three of these groups spread over ten days, then a free interval of about three weeks. He is a *square-headed, stout* youth, 5 ft. 9 in. in height, weight 10 st. 8 lb. His facial hair is scanty, the genital organs are normal, but the testicles rather, small. *He is now* very dull and apathetic, *so that it is impossible to obtain* knowledge of any sexual activity.

Glucose-tolerance test: fasting blood-sugar, 0·06 mg.; half an hour after 50 g. glucose, 0·11 mg.; one hour after, 0·07 mg.; one and a half hours after, 0·09 mg.; two hours after, 0·058 mg. Serum calcium varies between 8·6 and 10·7 mg. per 100 c.cm.; serum phosphorus, 4 mg. per 100 c.cm. Urine is normal, sp. gr. 1024. Radiography shows a sella turcica normal in size with large *posterior clinoid processes*; there is also some calcification of Paccionian bodies.

Recent fit periods have been: August 15th–16th; Sept. 11th–12th; Oct. 6th; Nov. 1st, 7th, 8th; Nov. 29th–Dec. 4th; Dec. 27th–Jan. 4th; Jan. 24th–Feb. 9th; March 1st–6th.

In these four cases we have stocky, square-headed patients of normal or short stature, with a tendency to obesity. The girl appears normal in her sexual development, while the boy approximates to the type of adiposo-genital dystrophy. The older man shows evidence of developmental sexual anomaly. The fourth case, at present less definite, is changing from a very intelligent youth to a slow dull person, unusually rapidly and markedly, and while this may be accounted for by his fits it might hypothetically be associated with endocrine disturbances. All four cases show some defect of carbohydrate metabolism, two cases showing glycosuria, and the other two having markedly increased sugar tolerance. There is no evidence of disturbed water metabolism. There are no local or radiological signs of a gross pituitary lesion, though the appearance of enlarged posterior clinoid processes may have some bearing on the condition.

This association of adiposity, sexual dysfunction, disturbed carbohydrate metabolism, with some slowness and dullness, points to an abnormality in the hypophyseo-diencephalic mechanisms, manifesting itself also in the periodicity of the epileptic discharges. This is of special interest in view of the suggestion that the diencephalic centres are responsible for periodicity in sleep, hibernation, and menstruation. It appears that in these cases the occurrence of the fits may be influenced or regulated by the abnormal activity of the hypophyseo-diencephalic centres.

I have to thank Dr. J. Tylor Fox, the medical superintendent of Lingfield Colony, for his kindness in allowing me to publish these cases, and for his assistance with the clinical details.

Clinical and Laboratory Notes

A CASE OF HEREDITARY TELANGIECTASIA

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The rarity of this condition makes it worthy of record, especially as the patient exhibited one or two unusual features.

History.—A man, aged 37, a machine-hand, was admitted to Middlesex Hospital on April 4th, 1933; the symptoms were shortness of breath, palpitations, swelling of feet, frequent epistaxes, and bleeding from spots on his lips. The shortness of breath had been present for six months and the swelling of feet for three weeks prior to admission. He had had epistaxes ever since 1918, but during the last six months they had become more frequent. Whereas formerly they had only occurred about once a month, more recently they occurred daily, particularly at night. He had noticed spots on his hands, face, and lips since 1918, but only in the last two years had those on his lips started to bleed. On being questioned, he stated that he thought that one or two of those on his hands had occasionally bled. He had noticed that those on his lips actually spurted at times. He had never had hæmaturia, hæmatemesis, nor hæmoptysis, and only on one occasion, about five years ago, had he noticed blood in his stools. He had no cough. He was a non-smoker and a teetotaler.

Previous history.—He had appendicitis with peritonitis at the age of 14. He was gassed in 1916 and wounded in the left groin and arm in the same year. He was gassed again and held a prisoner of war under severe conditions in 1917. He had never had rheumatic fever, venereal disease, or other serious illnesses.

Family history.—The patient's mother, aged 70, exhibited telangiectases on the ends of the fingers, on the tongue, palate, lips and inside the nose, on the skin edge, but not on the mucosa. An interesting feature was that on the palate the telangiectases did not appear under her dental plate. She had never suffered from epistaxis nor bleeding from the finger-tips. The lesions had been present for several years, but she had never paid any attention to them. His son, aged 12½, suffers from epistaxis, and when bleeding occurs from the nose it takes an unusually long time to stop. He did not exhibit many telangiectases, but there were a few pin-point ones on his lips and dilated venules on his nasal mucosa. He had none on his hands, inside his mouth, nor on his tympanic membranes. The patient's daughter, aged 9, had one pin-point lesion on her lower lip and two spider nævi on her right wrist. She had none on her nasal mucosa nor tympanic membranes and does not suffer from epistaxis. It is not unlikely that they will both develop further lesions as they grow older. Both exhibited numerous small red spots on the tips of their tongues, probably unduly vascular papillæ. A similar observation has been made by Ballantyne.[1]

The patient has two sisters and one brother, none of whom, nor their children, as far as is known, exhibit telangiectases nor suffer from epistaxis. His maternal grandparents and great-grandparents were normal as far as his mother could remember.

On examination the patient appeared well nourished. He exhibited a distinct pallor, his complexion being of a café-au-lait colour. His relatives stated that this had been present to some degree, though not so markedly as when seen, ever since he was gassed in 1916. He exhibited telangiectases on his lips, cheeks, tongue, palate, on his nasal mucosa and on his finger-tips, some being under his nails. Those on his cheeks were chiefly of the spider variety, the remainder being nodular and pin-point. The lesions on his fingers have been observed to change from time to time, some disappearing while fresh ones appear. East [2] has also noted this fact in the daughter of one of his cases and FitzHugh [3] states that three cases have been recorded where the telangiectases have disappeared spontaneously.

The cardiovascular system revealed no very gross abnormalities. The heart was slightly dilated and there was a soft systolic murmur at all areas and a reduplicated second sound at the base. The pulse was regular, rate 84, somewhat collapsing in character, there was no evidence of arterial thickening, and the blood pressure was 120/70 mm. Hg. The respiratory system showed evidence of emphysema, but nothing else abnormal was discovered. The liver and spleen were not palpable. There was an old operation scar on the abdomen. The feet were swollen above the ankles. On examination of the central nervous system the right knee-jerk was not obtained. Ophthalmoscopic examination revealed no abnormality.

Progress.—As long as the patient remained in bed he felt quite well and the epistaxes were less frequent. They occurred chiefly at night, presumably when the nasal mucosa became more congested. The œdema of the ankles subsided rapidly, but recurred to a lesser degree when he got up again. He had an occasional rise of temperature in the evening, never above 99·4°. On the evening of May 12th he suddenly developed acute pain in the right ear. There was at first no deafness, but three days later he developed deafness in the right ear and some in the left. Inspection of the right ear showed one telangiectasis on the posterior wall of the external auditory meatus and one on the tympanic membrane. The sudden pain may have been due to hæmorrhage within the ear. Unfortunately the ears were not examined before this incident occurred so it is not known whether the lesion on the membrane was new or not. The left ear appeared normal. I have only been able to find one reference (Cockayne [4]) to a lesion on a tympanic membrane. The patient's general condition gradually improved as the epistaxes became less frequent and he was discharged on May 19th, 1933.

Special investigations.—Blood counts (April 11th, 1933). Red cells 3,450,000, hæmoglobin 30 per cent., colour-index 0·4, white cells 1200, average diameter of red cells 7·7 µ, platelets 138,000 per c.mm. May 2nd. Red cells 3,500,000, hæmoglobin 32 per cent., colour-index 0·5, white cells 5000, polymorphonuclears 60 per cent., lymphocytes 31 per cent., monocytes 7 per cent., eosinophils 2 per cent., platelets 180,000. Blood culture incubated for 12 days from April 6th was sterile. Wassermann reaction was negative. Examination of the urine did not reveal the presence of blood chemically or cytologically and there were no other abnormal constituents on clinical examination. An electrocardiograph was normal. The patient's coagulation time was 10 minutes as compared with a control's 18 minutes.

Treatment.—As there were too many telangiectases on the nasal mucosa cauterisation was not attempted. The patient was given a nebula containing ung. hyd. nit. dil. ʒ i., ol. olivæ ad ℥ i to apply to the inside of the nose, the nostrils being gently pressed together. The object of this was primarily to clean away the crusting on the inside of the nose, and after it was started epistaxis was much less frequent. This may have been due to the fact that less nose-blowing would be required. At first he was given 3 c.cm. of whole blood intramuscularly every other day, but as he appeared to have a more severe epistaxis on the same evenings this was discontinued. Iron was administered in the form of Blaud's pill grs. 20 t.d.s.

This case is a true example of hereditary telangiectasia occurring in three generations. The patient's mother did not suffer from epistaxis, explained by the fact that there were no lesions on her nasal mucosa. This freedom from epistaxis is unusual, but other cases have been recorded, notably by East. The onset of epistaxis occurred in this patient at the age of 21. This is later than the majority of cases, most of which occur in childhood, but the maximum development of the lesions has taken place between the ages of 30 and 40, which is very typical. When first seen he was considered to be a case of subacute bacterial endocarditis, in favour of this diagnosis being his ill appearance, café-au-lait complexion, varying petechiæ on his fingers, lips, and elsewhere, and slight pyrexia. Against this, his blood culture was sterile (not, of course, strong negative evidence), he had no obvious organic lesion in his heart, and there was a leucopenia. In view of his low platelet count a diagnosis of thrombocytopænic purpura was considered, but against this it is unusual for slight trauma to produce hæmorrhage from purpuric lesions, purpuric lesions do not fade on pressure as these did, and in thrombocytopænic purpura the platelet count is usually much lower than in this case.

The fact that the platelet count is on the low side is worthy of note. Hurst and Plummer,[5] FitzHugh [3] and Goldstein [6] have all stated that the platelet count is normal in this condition, and while it is admitted that platelet counts are subject to considerable error in enumeration, wherever actual figures have been recorded in this condition they have been below the accepted normal of 200,000 to 300,000 per c.mm. In view of the anæmia usually present in these cases one would have expected a raised platelet count, if anything. Coagulation times, where recorded, are normal or decreased, and this is the finding in this case. The other symptoms of which the patient complained—i.e., shortness of breath, palpitations, and œdema of the ankles—were easily explained on the grounds of his severe anæmia.

The defect, according to Hanes [7] and Gjessing,[8] appears to be an absence of muscular and elastic tissue in the walls of dilated vessels lying under a locally thin epidermis. Slight trauma causes these lesions to bleed readily, and the failure of retraction of the vessels due to absence of elastic and muscular tissue causes prolonged bleeding from the site of a lesion. There is no prolongation of bleeding from normal areas of skin or mucosa, and the disease is in no way associated with hæmophilia. The fact that the patient's mother did not exhibit telangiectases on her palate under her dental plate, but did so on unprotected parts of the palate, lends some slight support to Hanes's belief that repeated small traumata are an ætiological factor.

SUMMARY

1. A case of hereditary telangiectasia occurring in three generations is described. The presence of lesions, apart from those on the nasal mucosa, in the patient's children at an age earlier than is usually observed is noted.

2. Interesting features are the lesion on the right tympanic membrane, the fact that his mother has never suffered from epistaxis or other bleeding, and the platelet count being below normal.

3. The differential diagnosis of this case is discussed and the treatment described.

I am greatly indebted to Dr. C. E. Lakin for permission to publish this case, to Prof. J. McIntosh and the Bland-Sutton Institute of Pathology for blood examinations, to Dr. E. A. Cockayne and Mr. C. P. Wilson for their help, and to Dr. G. E. S. Ward for electrocardiographing the patient.

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HÆMOLYTIC JAUNDICE

AN ATYPICAL CASE

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HÆMOLYTIC jaundice is of two types, the congenital and the acquired. The less common acquired type appears later in life than the congenital; it shows less jaundice, and although the anæmia is more marked the red blood-cells show only slightly increased fragility, as is evident from a case described by East.[1] The congenital type is stated to be definitely familial; the blood shows an indirect van den Bergh reaction, a mild secondary anæmia, usually with increase in microcytes and reticulocytes, and increased fragility of the red cells. The spleen is markedly enlarged, and often exacerbation of pain occur in the liver and splenic regions, accompanied by increase of the jaundice. The increased fragility of the red cells is usually accepted as the cause of the condition, but the rôle of the spleen as the causative factor has been stressed by Minkowski, and the details of the following case support his view.

A child, aged 5 years, was seen by me in March, 1933, suffering from jaundice. This had been present since birth without any intermission. Apart from slight attacks of pain in the upper abdomen at prolonged intervals she had appeared to be quite healthy. There was no history of any similar condition in the family. The blood showed an indirect van den Bergh reaction, and a count showed 4,224,000 red cells per c.mm. The red cells did not show anisocytosis or poikilocytosis. The hæmoglobin percentage was 74. The fragility of the red cells was not increased, hæmolysis starting in 0·45 per cent. solution and being complete in 0·38 per cent. solution. The Wassermann reaction was negative. The spleen was enlarged and palpable, and although the blood did not show the characteristics of acholuric jaundice, it was decided to remove the spleen. This was performed through a muscle-splitting incision in the left rectus. The enlarged spleen had no adhesions and was easily removed. Within five days the jaundice had disappeared and has not since returned. The blood examination now shows a red cell count of 5,280,000 per c.mm.; hæmolysis starts in 0·4 per cent. solution and is complete in 0·3 per cent. solution, a very slight and negligible difference from the test before operation. The spleen did not give the Prussian blue test for iron; the pulp was full of red blood-cells.

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[1] East, C. F. T.: Proc. Roy. Soc. Med., 1933, xxvi., 365.

The case does not conform with the usual history of congenital acholuric jaundice. The jaundice had been present since birth without intermission, and had been regarded at first as icterus neonatorum. There was no increased fragility of the red blood corpuscles and no family history of the disease. It would seem that in this case over-activity of the reticulo-endothelial cells of the spleen with increased hæmolysis was the cause of the jaundice.

I am much indebted to Dr. A. E. Somerford, of the Royal Manchester Children's Hospital, for the laboratory tests in this case.

TORSION OF THE TESTIS

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I was recently asked to see a case of torsion of the testicle, an account of which may prove of interest.

A man, aged 26, married, with no children, complained of pain starting in the left loin five days ago. A day later it had radiated to the groin and continued to be severe until he was seen. The onset was gradual and not associated with any effort. He had no sickness and the bowels were confined. On examination the abdomen was tender and rigid in the left inguinal region, and there was rectal tenderness. The testicle on the left side was not palpable, either in the scrotum or in the usual abnormal positions. A diagnosis of torsion was made with the proviso that the trouble might be due to strangulation in an accompanying hernia or merely inflammation in an undescended testis. There was no evidence to suggest an adenitis.

The patient was admitted to the Eltham and Mottingham cottage hospital. At operation a rudimentary cord and narrow hernial sac was found in the left canal but no testis. These structures were tied off and removed. Incision of the transversalis fascia revealed a greatly thickened peritoneum, and a rounded mass not unlike a testicle was felt bimanually through the abdominal wall. Laparotomy was performed through a left lower paramedian incision, and even at the lower end of this wound there was œdema. A gush of dark blood-stained fluid welled up from the pelvis and the testicle was at once seen, as an intra-abdominal viscus, attached to the internal ring by a cord about three-quarters of an inch long. It had twisted *four times on its pedicle.* Removal entailed no difficulty. The testis and epididymis were normal in size and relationship, but a deep plum colour from congestion. The cord was thrombosed in most of its short length. The peritoneum formed a complete investment, and there was no suggestion of a tunica. Recovery was uneventful.

The ectopic testis as a rule is found in one of three positions—namely, interstitial, in the abdominal wall; crural, in Scarpa's triangle; and perineal. This was really a case of non-descent. If the fold of peritoneum, which covers the testis in its developmental position below the kidney, the mesorchium, is unduly lax, it falls away from the internal and does not become engaged in the canal, finally becoming completely pedunculated. The ring here it is true was small, but this may well have been a result rather than a cause of non-descent.

MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON

On Oct. 9th Sir John Thomson-Walker gave the presidential address to this society, choosing as his subject

Surgery in the Early Nineteenth Century

"What I will place before you," he said, "is a series of sketches of some of the surgical methods and surroundings of a hundred years ago, in the hope that you may carry away a picture of the surgery of that time. I am fortunate in my material, for I have the manuscript notes of a medical student who walked the hospitals in London at that period. John Greene Crosse was a student from September, 1811, until August, 1813. He had been apprenticed to Dr. Bayly, a surgeon in the small market town of Stowbridge in Sussex, for five years, and by great industry had built up a sound knowledge of the theory and had seen something of the practice of surgery. He was entered as a pupil of Charles Bell, the anatomist, and resided in his house at 34, Soho-square. He attended the anatomy courses at the Great Windmill-street School and was enrolled a surgical pupil with Mr. Robert Keate—but it was young Benjamin Brodie who performed the majority of the operations he saw."

Throwing on the screen a list of the cases seen by young Crosse, Sir John continued: "This list is remarkable to us more for what it omits than for what it contains." Injuries and inflammations provided the majority of cases, altogether 61 per cent. of the total. Inflammations comprised: acute osteomyelitis, abscesses, and tuberculous disease of bones and joints. Of the injuries, fractures formed a large proportion, and 18 out of 27 of these were fractures of the extremities; the action of the muscles in preventing the exact replacement of the fragments and in reproducing the deformity was well understood. Fracture of the shaft of the femur was treated by local splints from hip to knee, kept in place by a 12-tailed flannel bandage, the thigh placed on a pillow and the knee moderately bent. Beneath the pillow was placed a long splint of firm timber secured with two broad straps firmly buckled to the limb. In transverse fractures of the shaft of the femur it was claimed that this treatment would never fail. But where the bone was broken obliquely "it must be confessed that cases sometimes occur where it fails completely." Unfortunately there was nothing to be done for these failures short of amputation. Flexing the limb instead of extending it was recommended, and if this failed there were various racks and pulleys by means of which force could be applied. Another principle in the treatment of fractures—namely, the early movement of joints and muscles—was circulating in the minds of surgeons at that time.

In compound fractures of the extremities the results were lamentable. The general opinion of surgeons was that amputation was always necessary, but there was another body of opinion that held amputation to be seldom or never required. It could not be said that the results of the seven cases of compound fracture noted by Crosse lent much support to the plan of avoiding immediate amputation; a mortality of 57 per cent. and the recovery of the remaining 43 per cent. after long and [illegible] illness was not a brilliant example to follow. We must pass over three years before we [illegible] [illegible] information in regard to the advantage of immediate amputation in military surgery." Crosse was now settled in Norwich as a surgeon. Crosse's old master, Charles Bell, was at Waterloo. Bell for three days scarcely had a knife out of his hand, Crosse wrote in his journal. On Oct. 18th Prof. Macartney of Dublin, his old chief, paid a visit to Norwich on his way back from the Continent. At a date which would correspond to Macartney's visit Crosse inserted in his notes a table of the "Capital P(rimary) and S(econdary) operations at hospitals at Brussels from June 16th until July 31st, 1815." From this table it would be seen that the English surgeons performed 146 amputations in the field with 40 deaths, and 225 secondary amputations during the first six and a half weeks after the battle with 83 deaths. This showed that the mortality of immediate operation was 21·9 per cent., while that of secondary amputation was 36·8 per cent.

HYDROCELE, HERNIA, AND LITHOTOMY

Hydrocele was a favourite subject for discussion at this time. A number of methods of treatment were in use, the most prominent of which were incision, seton, eschar, and injection. The seton consisted of about 30 threads of common white sewing silk which were passed through from the upper part of the swelling to its most dependent part. Inflammation commenced about the end of the third day, and when this was subsiding about the tenth or twelfth day the seton was diminished by drawing out six or eight threads at each dressing. The cure by caustic was made by means of adhesive plaster and a strip of common paste caustic, about a finger's breadth and the whole length of the tumour. The caustic was removed in five or six hours and a poultice applied. In a few days the eschar of the scrotum separated, and "in the course of four to six weeks the whole tunica vaginalis comes off, and the wound heals." Treatment by tapping and injection was the usual method. Many varieties of fluid were used, but red wine was the commonest. "When claret or Burgundy are employed they are commonly mixed with a sixth or a seventh part of water, and when port is used a third or fourth part of water is added." Crosse saw five cases of hydrocele as a student.

Operation on strangulated hernia was the sole interference with the abdominal contents that was practised, and that only because the bowel had formed an external swelling. It was only when symptoms of strangulation existed that operation on hernia was undertaken by "surgeons of character." Various measures were tried before venturing on the operation. Manipulation was of course the first, and posture was very important. For inguinal and femoral hernia the patient was to be placed as nearly perpendicularly on his head as possible. This was conveniently accomplished by "placing the patient's feet upon the shoulders of another person while his body is allowed to hang downwards and causing him in this posture to be jolted about." Blood-letting was considered as a "principal remedy." Purgatives were to be avoided, but stimulating glysters were valuable, and especially glysters of tobacco smoke, which was introduced into the rectum by various forms of bellows. Locally ice and snow were frequently used. Not more than two or three hours were to be spent in trying these measures. Gangrenous bowel was treated by cutting it away and attaching the ends of the bowel to the margins of the wound, forming an artificial anus. A cure of the hernia after operation was not expected and a truss was worn. Crosse saw two operations, and both cases did well.

Of all the major operations at this time, cutting for stone in the bladder was that which gave the surgeon most anxiety. It was the nearest approach to an internal operation that the surgeon ventured upon. It demanded anatomical knowledge, skill, courage, and, above all, constant practice. At the time when Crosse was a student, Martineau, surgeon to the Norfolk and Norwich Hospital, 1777–1828, had the highest reputation for lithotomy. When he was at St. George's Crosse saw 7 cases of lithotomy and 29 other operations; in the first two years he was at Norwich he saw 16 lithotomies and 43 other operations. In the hands of a really skilled surgeon the (stone) operation was a rapid performance. We have Morand's testimony that Cheselden's usual time in a straightforward case was about one minute, and he had seen him remove a stone in 24 seconds.

In one of Brodie's cases Crosse noted "The child was out of ye room 3½ minutes after ye commencement of ye operation." But Mr. Witham at the Middlesex Hospital bungled a case badly. "The scalpels for the outward incision would not cut and were obliged to be changed a first and a second time." The "outward incision" was too short and too high, and when the forceps were introduced the stone could not be felt. The forceps were pushed about in all directions, inserted and withdrawn, and after the three surgeons had been probing with the fingers and the forceps for 46 minutes, the patient was left in despair, the wound covered with lint and the patient put to bed. "In ye evening after ye operation a stone came away voluntarily bigger than a pigeon's egg, and tapered at each end." In spite of these difficulties the patient made a good recovery. The greatest success was in children under 14, and almost half the cases were included in this period. Here the remarkably low mortality figure of 6·8 per cent. was obtained. After the age of 40 more than a quarter of these patients died from the operation. In most of the fatal cases death was due to sepsis in some form. Hæmorrhage accounted for a few but not many. Occasionally the perineal wound sloughed, and the sepsis was evidently due either to infection at the time of the operation or to the contamination of a foul septic urine. But in the greater number of fatal cases death was due to pelvic cellulitis.

CANCER OF THE BREAST

Amputation of the breast for cancer was one of the major operations frequently performed. Many of the patients were seen for the first time when the disease was far advanced. Much time was wasted in trying remedies such as blistering, leeching, poulticing, and application of salves. The removal of the whole breast, and not only a portion of it, was recommended. The skin as far as possible was to be preserved. Clearing the pectoral muscle was part of a well-conducted operation. Crosse noted "Operations done in frosty weather are said to do badly." Crosse spent three months in Paris after leaving London, and here he saw another case. Dupuytren was the operator, and Crosse was frankly critical. "The operation was far more clumsily performed than I had expected and ye dressing could not be witnessed without pain by a person acquainted with ye union of wounds by the first intention after operation." This claim to healing by first intention was rather startling, but Crosse elsewhere elaborates the statement and gave some very interesting information in regard to the healing of wounds at that time. The method of closure in England was to bring the skin together with strapping and apply dry lint or linen smeared with simple ointment to the surface. Ligatures were left hanging from between the lips of the wound. "In the London hospitals complete union by the first intention is seldom or never accomplished; yet by attempting it the wound is much diminished and the cure of it rarely delayed later than three or four weeks." About the late results there was little information. In a number of cases there was no recurrence after a year's interval.

"Looking back from the pinnacle of modern surgery," said Sir John in conclusion, "the path that has been traversed between that time and the present is steep and tortuous, and the shadows that surround it are sombre and depressing. Yet when we consider the conditions of the time there is much to wonder at and something to admire. There were the faith and fortitude of the patient and the courage and marvellous dexterity of the surgeon. And there was the openness of mind and the thirst for knowledge for the sake of knowledge. Crosse had it, and his notebooks teem with accounts of dissections and experiments by which he tested the theories of the period. He got it from Charles Bell and from Abernethy; and Bell and Abernethy had it from John Hunter. It was the spirit of Hunter that pervaded the thought of the time and inspired these men. Let us catch something of it in the work of the session that lies before us."

ROYAL SOCIETY OF MEDICINE

SECTION OF THERAPEUTICS

Prof. J. H. Burn's presidential address to this section, which was delivered on Oct. 10th, was entitled

A Pharmacological Approach to the Cause of Asthma

About four years ago, he said, he began the investigation of an obscure pharmacological problem which, though interesting enough from a theoretical standpoint, offered no hope that any result of general importance would emerge from it. The problem was first created by the observation of Tainter and Chang that after the injection of cocaine the power of the substance tyramine to raise the blood pressure was lost.

Tyramine is the amine obtained by decarboxylation from the amino-acid tyrosine, and its action was first investigated by Dale and Dixon about 25 years ago. They found it to be very similar in all respects to adrenaline, though having about one-twentieth the potency. The action of adrenaline in raising the blood pressure was shown by Fröhlich and Loewi to be augmented by a previous injection of cocaine, and in view of the similarity between tyramine and adrenaline it was to be expected that the action of tyramine would be similarly augmented. As already stated, Tainter and Chang made the surprising observation that a previous injection of cocaine abolished the power of tyramine to raise the blood pressure.

An analysis of the action of tyramine on the blood-vessels soon revealed a further complication of the view that tyramine and adrenaline were qualitatively similar; it was found that when the effect of tyramine was tested on perfused vessels of the cat or the dog, only traces of vasoconstriction were produced. The constrictor action observed in the body was not seen in a perfused organ under conditions in which both the constrictor action of adrenaline and the dilator action of histamine were well displayed, and a lengthy investigation was made to determine the cause of the failure to observe it. The final outcome of this investigation was surprising, for it was found that the constrictor action of tyramine on the blood-vessels depended on the presence of adrenaline in the blood. When adrenaline was added to the perfusing blood at a constant rate, so that the vessels were already partially constricted, the injection of tyramine then produced a further constriction of a size comparable with that seen in the body. Incidentally it was found that there was the same necessity for the presence of adrenaline in order that the ordinary constrictor action of ephedrine might be observed in a perfused system.

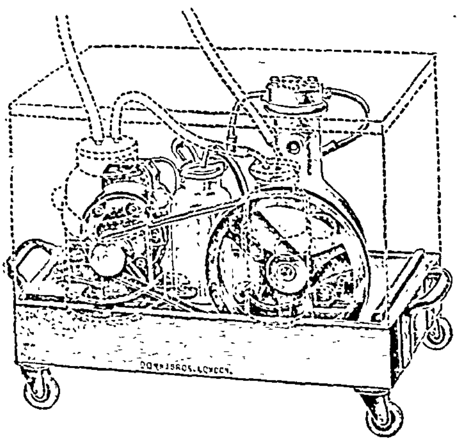
The next stage of the investigation was the discovery that the site of the action of tyramine and ephedrine differed from the site of action of adrenaline, inasmuch as tyramine and ephedrine were found to lose their effect in the body in organs to which the sympathetic fibres had degenerated. In these organs adrenaline still produces its effect and must act beyond the nerve-ending. It was evident that tyramine and ephedrine acted upon the sympathetic nerve-ending itself, and a connexion was sought between this fact and the previous observation of the part played by circulating adrenaline in increasing their action. Since the work of Loewi in 1921, the view has been gaining ground that the involuntary system of nerves act by the liberation of a chemical substance at their terminations; it is now accepted that the parasympathetic nerves liberate acetyl-choline, and it is widely believed that the sympathetic nerves liberate adrenaline or an adrenaline-like substance. Dr. Burn sought to explain his observations of the action of tyramine in terms of this theory; he argued that if the sympathetic nerve released adrenaline, there must be a store of adrenaline at the nerve-ending to be released; he supposed that in the perfused preparation this store must have been destroyed, so that tyramine acting on the nerve-ending, very much like a nerve impulse, failed to exert an effect. When the store was replenished by adding adrenaline to the circulating blood, the action of tyramine was restored. He was able to test this hypothesis by observing the effect of stimulating sympathetic nerves in a perfused preparation, and the results confirmed the hypothesis. Sympathetic stimulation in a perfused preparation produced very slight change in the calibre of the blood-vessels. When adrenaline was added to the blood and allowed to act for a period of time the effects of sympathetic stimulation were increased.

It was further found that in the presence of adrenaline, both ephedrine and sympathetic stimulation produced vasodilator effects which were not otherwise seen; while the part played by adrenaline in augmenting constrictor effects was noteworthy, the vaso-dilator effects were completely absent when there was no adrenaline in the circulation. From these observations the conclusion was drawn that the size of the response to sympathetic stimulation in the body probably depends on the amount of adrenaline in circulation. Graham has recorded that asthmatics who need much adrenaline do not respond to ephedrine, and this observation agrees very well with the suggestion that these patients contain in their blood a much smaller amount of circulating adrenaline than usual. Clinicians classify patients into those with excess of thyroid secretion, those with an average amount, and those with less than an average amount; variations are recognised again in the amount of insulin in different persons, and it is probable that there are variations in the amount of circulating adrenaline. Some evidence for this can indeed be found in cats. Hence it is reasonable to suggest that those people who have the least amount of circulating adrenaline will be predisposed to asthma, and that asthma will occur because of the failure of their broncho-dilator nerves to do their work efficiently. Whenever the bronchioles are unduly constricted, either by vagus impulses or as the reflex effect of nasal inflammation, or because of a chronic catarrhal state of the bronchioles themselves, these patients, being unable to dilate their bronchioles, will suffer an asthmatic seizure. If the precursors of adrenaline can be identified, the formation of adrenaline may be increased in the body by the addition of one or other of these precursors to the diet.

NEW INVENTIONS

SUCTION AND AIR DELIVERY UNIT

An efficient suction apparatus is essential in many throat investigations and operations and may be used for many operations on other parts of the body. With the apparatus here illustrated, suction is continuous and so powerful that clots of blood and tenacious mucus are quickly removed. It is possible to use it for intratracheal insufflation at the same time as suction, since the pump delivers 60 litres of air per minute. The valves in the cylinder head are designed for silence in operation and the sump carries enough oil for six months' continuous use. The unit is mounted in a robust mahogany case, fitted with rubber-tyred castors. On the side of the case two large screw-necked "Kilner" bottles are mounted. Blood and other fluids removed from the operating field by the suction plant find their way into the big bottle; the second bottle is a safety trap in the event of the first becoming full at a moment when it is inconvenient to change it. There are no resistances to regulate the speed, and in order to use the apparatus it is only necessary to connect it to the main electrical supply.



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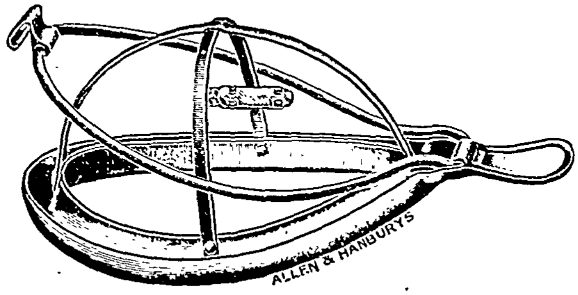
W. M. Mollison, M.Chir. Camb., F.R.C.S. Eng.

CAPSULE ATTACHMENT FOR THE SCHIMMELBUSCH TYPE OF MASK

The usual method of using chloroform capsules for women in labour has been to break a capsule at the onset of a uterine contraction, the broken capsule being then tucked between one of the struts and the gauze covering of a Schimmelbusch mask which is then applied to the patient's face. Two objections to this practice have been observed. (1) Occasionally by the time the capsule is broken and tucked inside the mask, the worst part of the pain may be over. (2) With the movements of the patient's head during a uterine contraction, the capsule is liable to fall out of its position. To obviate these difficulties and to facilitate the administration of capsules, I have devised an attachment which fits inside the Schimmelbusch mask. A small metal plate is firmly attached half-way up one of the lateral struts of the mask by means of a screw. Projecting into the mask and fixed to each end of the base plates are two spring clips into which the chloroform capsule is passed in the period between the pains. As a pain commences, the capsule is pressed by the finger against a small wedge fixed to the base plate and is readily broken. When the capsule is spent it is pulled out and replaced by a fresh one in readiness for the next pain. The attachment has been in use in the maternity department of the North Middlesex County Hospital and has proved most satisfactory.



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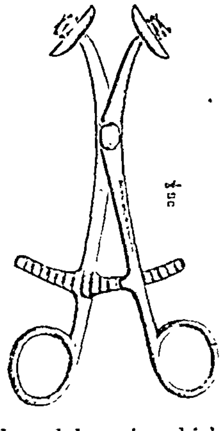
IMPROVED TONSIL FORCEPS

The self-retaining hæmostatic forceps here illustrated has two separate blades (each carrying a swab-holder) which are introduced separately, the member carrying the ratchet arm before the other. When the swabs are nicely home in the tonsillar fossæ the blades are easily locked and firm continuous pressure can be exerted upon the bleeding surfaces by approximation of the ring grips, the ratchet preventing any relaxation until desired. Disengagement is easy. It is only necessary to traverse two or three notches of the ratchet to reduce the counter-pressure of the tonsillar fossæ on the swabs, and then the upper member can be withdrawn directly outwards (from the mouth) by reason of the obliquity of its engaging slot. The swab-carrying mechanism consists of a twin cylindrical corkscrew rising from a saucer-shaped base in which each swab is *efficiently supported. The swabs should* be of a size likely to fit the fossæ and be tightly packed. The corkscrew points should be engaged at a little distance from the twisting and tying pole of the swab. The ratchet arm is carried across the shaft of the first blade to allow for exceptionally wide throats.



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REVIEWS AND NOTICES OF BOOKS

The Mode of Action of Drugs on Cells

By A. J. Clark, B.A., M.D., F.R.C.P., F.R.S., Professor of Materia Medica in the University of Edinburgh. London: Edward Arnold and Co. 1933. Pp. 298. 18s.

The reader of this work after studying it carefully may well come to the conclusion that he has learned little of positive value; in fact, that not very much appears to be known of the mode of action of drugs on living cells. This is exactly the purpose Prof. Clark had in mind in expanding in book form the lectures he delivered last year for the University of London; for until the spurious nature of most of the theories advanced to explain drug action is fully realised little real progress can be hoped for.

It has become the habit in recent years for workers in this field to seek explanations for their observations from the known laws of physical chemistry, and to enshroud their data in mathematical formulæ. But, as Prof. Clark proves conclusively throughout his book, the living cell is far more complex than any non-living colloidal system, and the standard of accuracy of quantitative pharmacological data is relatively so low as to render them almost unsuitable for profitable mathematical analysis. He has therefore wisely made no attempt to establish laws regarding the reactions that occur between drugs and cells, but has limited himself to examining critically in certain simple selected cases whether or not the phenomena can be explained by the application of the known laws of physical chemistry. He discusses first the living cell considered as a physico-chemical system, the intricate problems of the fixation of drugs by cells, and the kinetics of cell-drug reactions. There are excellent chapters on the variation in the response of individual members of a population to drugs and other agencies, on equilibria between drugs and cells, and on the significance of time-action curves. The theories of drug action, the mode of action of hormones and vitamins, drug antagonisms, quantitative measurements of the action of radiations on cells, and the effect of temperature on drug actions are dealt with in succeeding chapters. Numerous references are given, and the subject is dealt with in a masterly fashion.

The book should be read and digested by research workers in the whole field of biology.

Operative Surgery

By Warren Stone Bickham, M.D., F.A.C.S., former Surgeon in Charge of General Surgery, Manhattan State Hospital, New York; and Calvin Mason Smyth, Jr., B.S., M.D., F.A.C.S., Assistant Professor of Surgery, Graduate School of Medicine, University of Pennsylvania. Vol. III. London: W. B. Saunders Company. 1933. Pp. 849. 55s.

Bickham's surgery is a monumental compilation of every operation of importance in surgery. Eight years ago when it was published it represented faithfully the position of technical surgery at that date; it was a magnificent one-man work. As the years passed revision and additions became essential, and instead of tampering with the original book Dr. C. M. Smyth, who has been entrusted with the task of bringing the work up to date, has chosen to compile a supplemental volume. He has found so much to add that this supplementary volume contains 850 pages. It is just as profusely illustrated and as well printed as its predecessors, whose character he has managed to maintain. The greatest additions have been to the surgery of the chest and colon, but all really important recent work is described, such as Henry's approach to the long bones and some of the newer methods of treating fractures. In the section on the thorax such subjects as bronchography, thoracoplasty, apicolysis, the closure of bronchial fistulæ, and lobectomy are all adequately treated. Operations on the heart, such as valvulectomy, are described, but it would have been perhaps of more use to insert a discussion on points of technique in Trendelenburg's operation now that several successful cases have been reported. In the section on the colon aseptic excision is described and new accounts of colectomy in the various regions are included. The two-stage Paul operation is still referred to as that of Mickulicz, though Paul anticipated Mickulicz's work. We could not find instructions on how to remove the stellate sympathetic ganglion from the back, and the account of the anterior operation is sketchy and inadequate, though there appear descriptions of section of the glossopharyngeal nerve intracranially, and of removal of a lobe of the brain, both of them uncommon operations and one very rare indeed. Nerve implantation into muscle and some nerve graft operations offer so little prospect of success or are so very seldom indicated that they might have been omitted. The author recommends local anæsthesia in nerve operations because of the time consumed, and a few lines later recommends the use of a tourniquet. Surely this is dangerous advice, and quite apart from the risk of applying a tourniquet for so long, the bed in which the nerve lies is likely to be subject to less subsequent change if the operation is done without tourniquet hæmostasis. An interesting technique for complete removal of the parotid gland, new to us, appears on page 270, but no indications for its use. It would seem to be unsuitable for malignant disease.

Only minor blemishes, however, can be found in an otherwise admirable volume. The author deserves congratulation on the production of a book which, as a work of reference, should be owned by every operating surgeon.

Crimes and Criminals

By William A. White, A.M., M.D., Sc.D., President of the International Committee on Mental Hygiene; Professor of Nervous and Mental Disease, George Washington University and the Naval Medical School, U.S.A. New York: Farrar and Rinehart. 1933. Pp. 276. $2.50.

Prof. White looks upon crime with the eyes of a distinguished American physician, and from the standpoint of 40 years of work as a clinical and forensic psychiatrist; his survey accordingly becomes an important contribution to the study of mental science. Years ago, he reminds us, in the Middle Ages, what we now call crimes were considered as sins against God, and were dealt with by the Church in an ecclesiastical court. Later on, as we know, when the Church came to lose much of its control over political and secular matters the ideas concerning these types of conduct also changed, and crimes were regarded as offences against the State, and were tried therefore in civil courts administered by officers appointed by the State even as they are to this day.

Now, however, crime itself is coming to be considered as an abstract concept no longer having any material existence. It is only criminals that exist. The emphasis has been shifted from the act to the actor, and the individual delinquent is himself the object of attention; instead of his acts being thought of as sins or as crimes—they are still regarded as antisocial—they are now looked upon as maladjustments at the psycho-social level. So-called criminal conduct, then, is the result of an incapacity on the part of the individual to make an adequate social adjustment, and the ideal treatment is not to punish an offender but to salvage a maladjusted individual, both for his own sake and for the sake of the society of which he is a part.

Dr. White's conclusions are derived from his extensive experience, and are founded on the examination of numerous case-histories, many of which are given in this book. He maintains that we are at the present time at a tremendously important and significant stage in the development of our ideas about mental phenomena, including those commonly called crimes, but that as in the course of evolution the accumulation of facts is followed by the formulation of laws, and although the psychological field surveyed may look "extremely complex, . . . we have a right to hope that out of this chaotic condition will issue laws that will result in such an amazing simplification that the problems of to-day will drop into common moulds, and their solution will thus be rendered infinitely easier." Dr. White's conviction is that unless the present punitive method of dealing with criminals is abandoned the chances of evolving a better method are seriously impaired.

Women in Subjection

By I. B. O'Malley. London: G. Duckworth and Co., Ltd. 1933. Pp. 365. 15*s*.

This learned and truly interesting study of the lives of women whose activities have especially counted in English social development covers a period which terminates in 1832. No notice therefore could be included of even the earliest manifestations of a wish on the part of women to enter the medical profession. But this does not imply that the book has no medical interest. On the contrary, the medical reader will see throughout in this record of the legal and economic position of women as it was at the end of the eighteenth century how often an ignorance of physiology was at the bottom of the abuses, and will recognise how the movement for the improvement of women's position, that marked the first third of the nineteenth century, synchronised with the developments in scientific knowledge.

The book opens with a review of the measures of legislation and the prevailing customs relating to women from our early social history until the end of the eighteenth century, when Mary Wollstonecraft wrote the Vindication of the Rights of Women. Mrs. O'Malley here shows that, whatever the legal privileges of women might be worth, they were in practice counter-weighted with heavy disadvantages; while, where the actions of women appeared to contest a subjection to male masters, these actions were treated as constituting a revolt against admitted social laws and were punished with particular severity, penalties current in dealing with the rebellion of slaves being imposed. On the whole, all offences seem to have been regarded up to this date as worse when perpetrated by women. As the demands of developing social life became more complicated, while agricultural and industrial processes grew more specialised, the subordination of women was aggravated by the number of difficult and unpleasant tasks that fell to them as their share of the increasing demands on brains and industry, so that the handicap of unequal education became obvious. The relative education of men and women is, at this point in the book, the subject of a charming essay, in which the curious fact is brought out that towards the end of the eighteenth century—the period of "sensibility"—"it was not enough for women to be beautiful animals, it was hardly desired that they should be strong ones; they must have mental qualities, but only those which would stimulate the instincts and soothe the feelings of men." As Mrs. O'Malley writes, her assertions and deductions being supported here (as elsewhere in the book) by carefully documented references, "it was difficult to superadd the chief human qualities on a foundation of weakness and suddenly to turn the Circassian slave into a helpmate."

The vindication of the position of women began in the family, for the law from the dawn of history considered wives as property and gave mothers no rights in regard to their children, while the conventions of society reflected the law. Yet every man who turned to his wife for support, and every child who depended on the judgment of a mother weakened these conventions. The claim for a fairer position was made during the eighteenth century by many writers, men and women, but professional authorship was difficult for women. Here Mrs. O'Malley attributes considerable influence to Mrs. Elizabeth Montagu (1720–1800), who led the blue stocking movement, to Fanny Burney, Hannah More, Mrs. Trimmer, and Mrs. Barbauld, but Mary Wollstonecraft was the great protagonist. Mrs. O'Malley says of her in an eloquent biographical chapter, "the intensity of her emotion and the courage of her thought had given a special value to her experience: her short years had been full of colour and light, as well as of pain. In her struggles she had indeed hurt herself, but she had plucked a brand from heaven for the enlightenment of other women; to the women's movement she was a kind of Prometheus."

A second part of the book, starting with the death of Mary Wollstonecraft, describes the labours of the women philanthropists, the work of Elizabeth Fry, the progress of education, and the arrival of numerous successful women scholars and writers. These later chapters comprise a closely informed critique of Jane Austen, and show how the progress of education and its influence upon women are displayed in the work of Mary Somerville, Maria Edgworth, Mrs. Anne Radcliffe, Harriet Martineau, Mrs. Jameson, and other well-known thinkers and writers.

Mrs. O'Malley has written with accuracy and fairness the story of a social revolution which deserves the attention of medicine alike for its immediate results and its far-reaching influences.

In the review of Rose and Carless' Manual of Surgery in The Lancet last week, it should have been stated that the book is now being issued in two different forms—namely, in one and in two volumes. The price (30*s*.) is the same for both.

Hospital Air Pageants.—The British Hospitals Air Pageant tour concluded with a display at Greenwich on Sunday. The tour began in April, and 178 towns in England, Scotland, and Wales have been visited. There have been 750,000 spectators, and over £7000 has been realised for the hospitals.

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THE LANCET

LONDON: SATURDAY, OCTOBER 14, 1933

DIET AND WEIGHT

In these days of "slimming" there is no more popular subject of discussion amongst the laity than the reduction of weight, and each victim of obesity, real or imaginary, has his (or more often her) panacea to offer. In this fashion plays a great part. At one time the system of the late Mr. Banting is all the vogue; at another, some more special "cure," such as the "potato" or "milk" plan, or the "dry" diet. Physical methods are popular, probably because they involve less self-denial than restriction of diet, and accordingly we find that the advocates of Turkish baths, massage, or the wearing of india-rubber corsets always have a large following. And yet, as Prof. E. C. Dodds points out in an address summarised in our last issue, the problem of weight reduction is essentially a mathematical one, the principles of which are perfectly well understood by physiologists. The amount of energy, measured in calories, required to run the bodily machine under different conditions is definitely known, and any habitual intake in excess of this results in the gradual accumulation of fat. The obese person, therefore, who complains that he continues to gain weight even although he is a small eater is, as Prof. Dodds says, usually self-deceived.

The clinician, however, who has to deal with individual patients and not with mere bodily machines, may be excused if he thinks that the problem of obesity and its treatment is not quite so simple as this statement of it would imply. He has a shrewd suspicion that people vary very much in their capacity for storing fat, apart altogether from the question of how much they eat, even although he cannot explain such individual differences. It may perhaps be a question of metabolic peculiarity. Some persons seem to be more economical machines than others; they do, as it were, more "miles to the gallon," and we know that this greater economy can to some extent be acquired by training and is also developed spontaneously in diabetes. Further, the influence of the endocrine glands cannot be left out of consideration, although Prof. Dodds, deliberately simplifying the issues, hardly touched upon it. The most troublesome cases of obesity which the clinician has to deal with are those met with in children and in young women, and in these it is certainly not a mere question of diet. In these endogenous cases, as they are called, the fault most probably lies in some endocrine defect or imbalance, although its exact nature is obscure. It is not a mere deficiency of thyroid secretion, for they do not respond very well to treatment by thyroid; possibly it is the anterior pituitary or the internal secretions of the reproductive system that are at fault, but that the problem is in them not a purely mathematical one the therapist has no doubt.

Nor can mathematical considerations alone be taken into account in dealing with the "exogenous" cases which, of course, include by far the larger number of obese patients. The form in which the energy is consumed has to be reckoned with. A given intake of calories in the form of protein, for instance, is much less likely to lead to fat deposition than an equivalent intake in the form of carbohydrate. In this connexion we should like to hear the views of other physiologists on Prof. Dodds's statement as to the fattening effect of alcohol. Is it true that a "double whisky" is only to be balanced by playing a full half-hour of squash? Alcohol, of course, is oxidised in the body and serves as a source of heat and energy, but, unless it is taken in a very dilute form and the intake spread over some time, part of it easily escapes oxidation altogether. Further, by dilating surface blood-vessels, may it not actually cause more heat to be lost to the body than it supplies?

We raise these questions not to impugn in any degree Prof. Dodds's main contention, but only to enter a caveat against an impression which his remarks may have left that *any* form of obesity can be reduced by suitable application of the principles he outlines. This is quite true of the exogenous obesity commonly met with in middle-aged persons, but it is certainly not true of the endogenous cases. About these there is still an element of obscurity which it is well to recognise.

PROGRESSIVE HYPERPLASIAS OF THE BLOOD-FORMING ORGANS

Among diseases of the blood-forming organs which are characterised by progressive cell proliferation, the leukæmias, plasma cell myelomas, Hodgkin's lymphogranulomatosis, and Gaucher's splenomegaly are the best known. Although their clinical course and macroscopic structure may at times be confused, a final differential diagnosis can be made on the basis of well-marked microscopic structures, and we have little difficulty now in defining them. That this list does not by any means exhaust the possible variations in histological appearance which progressively hyperplastic lymphoid tissue and bone-marrow are able to provide, is shown by numerous case reports in various journals on the Continent, in this country, and in America of unrecognised conditions which defy classification, as well as by attempts to frame a comprehensive classification which will include all newly described varieties. The prognosis of most of the newer diseases appears to be hopeless, like that of most of the older group, for, as a rule, accounts include autopsy findings. Here and there, however, an individual recovers after splenectomy, and in all probability many cases that survive for any length of time after excision of lymphatic glands for diagnosis fail to be recorded because the patients disappear, and too little is known about their condition to make it worth while describing it. If only for the immediate purpose of ascertaining the prognosis these obscure hyperplasias deserve study.

The difficulties with which the histologist is faced in attempting to interpret the microscopic appearances can hardly be realised by those who have not been in a position of having to report on these unusual conditions. The whole architecture of the hæmopoietic organs becomes changed and the cells are so varied in shape and size, and may differ so greatly from normal adult cells, that it is often impossible to say whence they are derived. Consequently many cases have been labelled vaguely as endothelioma without justification. More recently the term reticulo-endotheliosis, favoured by some, has come to the rescue, while others, following E. Letterer,[1] consider reticulosis to be a more logical name, because the basic cell of the blood-forming tissue is a reticulum cell. There is a danger that many will become labelled only by the authors' names, as in Gaucher's splenomegaly, Christian syndrome, and Niemann-Pick disease. According to a suggestion of W. G. MacCallum[2] the proper solution would be a classification based on normal histology. For every type of normal cell, if we knew them all, it might be possible to find a corresponding progressive hyperplasia in the same way that malignant tumours are differentiated according to their origin. A similar suggestion was put forward by B. D. Pullinger[3] in an attempt to elucidate the histogenesis of lymphadenoma and atypical examples of this condition. That knowledge of the normal development and adult histology of the hæmopoietic organs is sufficiently well advanced to enable such a course to be pursued is evident from the work of A. Maximow[4] and his collaborators, who have assembled the facts established by the research of many others and have added many original observations of their own. In the September issue of the *Journal of Pathology and Bacteriology* Dr. J. M. Ross reports two unusual cases which fall into the class of hyperplasias under discussion, and she proposes a scheme of classification based on Maximow's views, of which she gives a short summary. The progressive hyperplasias of the blood-forming organs are divided into two main groups, the one including those cases in which no disturbance of metabolism is known to exist, and the other in which metabolic disturbances can be demonstrated. In this second group we meet with Gaucher's disease among lipoid or storage histiocytoses. Subdivisions in the first group are made according to the type of cell which has been proliferating and to its state of differentiation. For example, the undifferentiated reticulum cell is capable of giving rise to lymphoid follicles, fibril-bearing cells, histiocytes, myeloid cells, giant cells, and mixtures of any or all of these. As an example of reticulum cells which have already specialised and then proliferated, we find sinus lining cells (formerly known as endothelium) and it is suggested that these give rise to both leukæmic and aleukæmic hyperplasia, the former being a monocyte leukæmia. In the same specialised subgroup one supposes that lymphoid and myelogenous leukæmia might be included, though Ross does not specifically say this. It would, however, be logical, for although the granular and non-granular leucocytes are parenchymatous elements, they are ultimately derived from reticulum. From cases reported by other authors Ross is able to give instances from the literature of most of these potential hyperplasias. Two of her own cases correspond closely with others that have been recorded. The first is a lymphoid hyperplasia from follicular reticulum and the second a fibrillary reticulosis. In considering lymphadenoma as an example of unrestricted differentiation, she is in agreement with Pullinger.[3] Ross's article is profusely and clearly illustrated by macroscopic and microscopic preparations, so that all who are specially concerned with this obscure branch of pathology will find it profitable and easy to compare their own examples with hers, and also to test the usefulness of the scheme.

It is worthy of note that the authors quoted by Ross have not recorded second examples of their cases, and therefore it seems probable that the individual conditions are rare, although the group as a whole is not. For this reason complete records of any examples of unusual hyperplasia of lymphoid and myeloid tissue are valuable and will enable some sort of order to be reached when a sufficient number has been collected. A final classification must wait for knowledge of ætiology, and when we remember the depths of our ignorance of the normal physiology of this system it seems that we have a long way to go. Equally regrettable is the fact that so far no experimental animal has been found whose tissues can be made to produce anything remotely resembling the hyperplasias of human blood-forming organs. Fowl leukæmia and mouse lymphoma are clues which have probably not yet been thoroughly followed up. When they are, the experimental pathologists may well be thankful for the clearing of the ground which work on normal and pathological reticulum is gradually effecting.

UNTRACEABLE

We published last week at the request of the Registrar of the General Medical Council a list of the medical practitioners whose names at the present time appear in the Medical Register, but who have failed to reply to official inquiries as to the accuracy of their addresses. It is the duty of the Registrar, and of the Registrar for Scotland, to keep the respective Registers correct, to erase the names of all persons on the Register as they die, and from time to time to make the necessary alterations in the addresses or qualification of the persons included in the list. To effect this the Medical Act empowers the officers of the General Medical Council to write to any persons whose names appear in the Register, according to the addresses there given, in order to ascertain whether he or she has ceased to practise or has made any change in residence. If within six months no answer is returned to the letter of inquiry, it becomes lawful to erase the practitioner's name from the Register; but it is stated in the Act that the name can be replaced on a satisfactory explanation of the circumstances to the Council. The list published in our columns included 269 names of persons who have not replied to the last letter of inquiry, and the Registrar of the General Medical Council warns anyone who finds his or her name included in the list that communication should be made immediately with the office of the Council at 44, Hallam-street, London, W.1, or the name will be omitted from the next issue of the Register.

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[1] *Frankfurt. Zeits. f. Path.*, 1924, xxx., 377.

[2] Text-book of Pathology, London, 1932, p. 849.

[3] Rose Research on Lymphadenoma, London, 1932.

[4] Handbuch d. mikr. Anat. d. Mensch., 1927, Bd. II., Berlin; also Maximow and Bloom: Text-book of Histology, Philadelphia and London, 1930.

A rapid analysis of the names published last week discloses the fact that of these men and women 80 are resident abroad, 15 give their address only under the denomination of some public service to which they belong, or at a club or bank, 78 are resident in Ireland, and 11 in Scotland, while a few names seem to have already disappeared, having, presumably, failed to comply with previous warnings from the Registrar. In this last case relatives or executors have failed to give information which might have been expected from them. The balance of the names are those of practitioners who were resident in England on the last occasion when an official address was furnished. That the figures under which the untraceables can be classified bear no logical relation to the general make-up of the Register is obvious. A large fraction of the practitioners are resident abroad, while the Irish claim a place on the list out of all proportion to their numerical appearance on the Register; also a certain number of persons could have been placed in either category as Irish or living abroad. It is noticeable also that the proportion of women compared with their numbers in the complete Register is high, and many of these are practising abroad to judge by their present official addresses. From these things it is clear that practitioners resident out of England and Scotland, and especially those resident in the Dependencies and Colonies, do not consider that the presence or absence of their names on the Register is of any importance either to themselves or others.

This is an attitude which is embarrassing to the Registrar whose official responsibility it is to maintain the Medical Register as a complete and accurate record of legal practitioners, and also an erroneous view of the situation. Removal from the Register, which will follow on the failure to maintain a correct entry in its pages, is prejudicial to the individual, the medical profession, and the public. With regard to the personal responsibility for maintaining a name on the Register in such a way that its bearer can be quickly identified, it should be remembered that removal of the name may at any moment, and at any place, subject the practitioner to serious inconvenience as an applicant for a post, as a reference for others who desire professional assistance, as a witness in a law court or as the signer of death certificates. In none of these circumstances is it certain that the practitioner would be the only sufferer, as the cause of public justice may be impeded by the inability to prove the possession of registered qualifications. And there is a further position to be considered—namely, the possibility that the wrong entry of a name in the Register may give opportunity to the impersonator. That this is not an imaginary position has been proved by several striking instances, and one such may be recalled because of its sensational circumstances and because it led to a direct warning to practitioners from Sir DONALD MACALISTER, then President of the General Medical Council. At the Liverpool assizes in the autumn of 1917, a person, oddly named VIRTUE, was enabled successfully to impersonate a practitioner whose name was appearing on the Register though he had for some time been dead, no notice having been given of the event. VIRTUE practised medicine for some years until, in connexion with the recruiting work of the war, official vigilance was awakened. He was arrested, but committed suicide a few days before he came up for trial. No amount of zeal on the part of the Registrar will prevent fraud, so long as many of the medical profession neglect to notify the central bureau of their change of address.

COLOUR VISION IN THE NAVY

THE Committee on the Physiology of Vision of the Medical Research Council, of which Sir JOHN PARSONS, F.R.S., is the chairman, has just issued a third report (Special Report Series No. 185) on problems of colour vision. Their previous reports on this subject dealt mainly with the theoretical and biographical aspects of the subject. This one is essentially a practical study, entitled Colour Vision Requirements in the Royal Navy. The important conclusion reached is that the existing system of testing colour vision has failed to exclude seriously defective persons from the Navy. It is recommended that the final examination of the colour vision of candidates for entry should be undertaken at the training establishments by ophthalmic surgeons equipped with adequate apparatus, all previous examinations being regarded as provisional. The official instructions with regard to the method of using colour vision tests are held to call for drastic revision and amplification, and it is emphasised that no one technical test is infallible. A further recommendation is that the use of colour as a sole distinguishing feature of otherwise similar objects should be reduced to a minimum.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—The annual general meeting of this society will be held to-day, Friday, at 8.45 P.M., at the Miller General Hospital, Greenwich, S.E. The next meeting will take place on Nov. 10th, when Mr. W. E. Tucker will speak on athletic injuries and manipulation. On Dec. 8th Sir Charles Gordon-Watson will speak on difficulties and dangers in rectal and colon surgery. Speakers at meetings during 1934 include Dr. William Smith, Mr. C. Hamblen Thomas, and Dr. H. Letheby Tidy. The secretary is Dr. C. J. B. Buchan, 267, Baring-road, Grove Park, London, S.E.12.

ANNOTATIONS

THE PROPHYLACTIC USE OF ANTI-POLIOMYELITIS SERUM

THE blood-serum of convalescent patients or of persons who have acquired an immunity as the result of a past attack has been used of late years as a means of protection against several diseases. Its most extensive use has been for protecting children against measles, and a similar procedure has been given a trial on a fairly large scale in the United States for the prevention of poliomyelitis. Experimental work [1-3] has shown that the so-called "immune serum" of persons who have recovered from this disease will prevent the development of poliomyelitis in monkeys, which are inoculated in the brain with virus. This result was obtained not only when the serum and virus were mixed before inoculation but also when the serum was given intrathecally 18 to 24 hours after, or as long as four days before the virus was introduced into the brain. It has also been found that the serum of some adults who had never, as far as could be ascertained, been infected with poliomyelitis can give protection, but this effect is uncertain and may depend on these people having passed through an epidemic and so acquired immunity without an overt attack.

During epidemics in the United States considerable numbers of children have been given intramuscularly a dose of 30 c.cm. of the blood or serum of their parents with a view to prophylaxis, and the results have been apparently very satisfactory, but the relatively small number of cases of poliomyelitis in the general population and their capricious distribution make it very difficult to draw any sound conclusions from these attempts to check the epidemic spread. The pooled immune serum of persons who have passed through an attack of poliomyelitis has been used of course also—and much more widely—for the treatment of early cases, before the onset of paralysis, and it is generally held that the results justify its further trial. Details of the technique employed with apparent success in Melbourne have been given in our columns [4] and, as we announced on July 8th, a small amount of serum has been prepared for issue at the Lister Institute, Elstree, with the coöperation of the Medical Research Council and the public health department of the London County Council. Outfits each containing enough serum for the treatment of one case can be obtained without charge from the medical superintendent, Western Hospital, Seagrave-road, Fulham, London, S.W.6, on condition that a full account of the case and the results of treatment are furnished subsequently. This supply is intended solely for the treatment of patients in the preparalytic stage of the illness. The difficulty of obtaining adequate quantities of human immune serum at the present time in this country make it impracticable to permit its employment for prophylaxis. With these considerations in view an antiserum has been prepared from the horse at the serum department of the Lister Institute, which possesses a higher degree of potency when tested in monkeys than an average pooled human immune serum. An intramuscular dose of 5 c.cm. is recommended for the prophylaxis of those exposed to infection, especially for "contacts" during an epidemic. It is now procurable through Messrs. Allen and Hanburys. If an outbreak occurred in a boarding school and—in accordance with the advice given by the Ministry of Health—the school was not closed, the prophylactic use of such serum might reasonably be considered. The Memorandum on Acute Poliomyelitis, recently issued by the Ministry,[2] contains much useful information on this disease and its treatment, but the prophylactic use of antiserum is not mentioned, and indeed the serum was not then available. A brief account of prophylaxis by means of antisera is given in the monograph on poliomyelitis, published last year on behalf of the International Committee for the Study of Infantile Paralysis organised by Mr. Jeremiah Milbank.[3]

THE NEED FOR A STUDY OF THE HISTORY OF MEDICINE

Sir StClair Thomson chose this title for a brief and eloquent presidential address with which he opened the new session of the section of the history of medicine at the Royal Society of Medicine last Wednesday. He related that a hundred years ago almost every university in Germany had its professor of the history of medicine, but the phenomenal advance of scientific medicine, and a reaction from centuries of speculation had led to a neglect of the subject, and one chair after another had died out. He declared that it was no wonder that the strong wine of rapid progress had gone to the heads of those who did not remind themselves of the inevitability of gradualness. But the old form of history is by no means dead or useless. Dr. Singer, a professional exponent of the subject in this country, urged the continued valuable work of the amateur, using the term in its most honourable sense. Anecdote and biography, though they might be unworthy of the name of science, have invaluable lessons to teach the young doctor of the present day; and, said Sir StClair, there is little fear of the art becoming tainted with trade if men study the Hippocratic tradition. Those Georgian practitioners who devoted themselves to the classics had a culture, an imagination, an idealism, and a consideration for the individual which their too-scientific successors seem to have lost. Scientific medicine Sir StClair held to have led to an exaggeration of that which is physically demonstrative, so that the physician plucks out fragments of the sick man's anatomy, but ceases to lay a friendly hand on his patient's arm to estimate his well-being. As in other walks of life, man is becoming the slave of the machine—card-index minded. The president humorously affirmed that practitioners no longer brought to him a suffering fellow-being for consultation, but a dossier with a robot in tow. Truly had it been said, "L'amour de la médecine fait le savant; l'amour du malade fait le médecin." It was only the exaggeration of the scientific method that he deplored, and no one was more willing than himself to acknowledge its success and its value. But as a result of that exaggeration he could see on the horizon—in the zigzag evolution of this unintelligible world—the reaction towards a half-baked appreciation of philosophy and psychology within the ranks of medicine, and a monstrous regiment of faith-healers outside them. The history of medicine is the great factor opposing both extremes. It is far more than the history of medicine; it is medicine itself, and the most perfect method of approach to the scientific problems of to-day. Those

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[1] Flexner, S.: Brit. Med. Jour., 1933, i., 132.

[2] Ministry of Health Mem. on Acute Poliomyelitis, 166/Med., November, 1932.

[3] Poliomyelitis. Baltimore: Williams and Wilkins Co. 1932. See THE LANCET, 1932, ii., 1436.

[4] THE LANCET, 1932, i., 169, 527.

who become historically minded absorb unconsciously from these proud records a high standard of ethics and a respect for the antiquity of their calling. Physics and chemistry, the deities of the scientific physician, are but children compared with medicine, whose records go back to 2500 B.C. Before the Christian era doctors prescribed assafœtida, henbane, and myrrh; the laryngologist of that day used liquorice in his lozenges; for 3000 years man has emptied his colon with castor oil and aloes, coughed up his catarrh with squills, balanced his acidity with bicarbonate of soda, and eased his pains with opium. A study of the history of medicine, Sir StClair concluded, will imbue us with moderation in esteeming the value of our work, fortify our independence of judgment, stimulate our general culture, and diminish that inferiority complex from which the modern physician suffers as the result of the poverty of scientific medicine. It will revive the kinship of our art with literature, music, poetry, and the adornments of life; it will help us to get rid of the junk of opinion that is so apt to over-lie knowledge, and teach us the art of guiding men.

Sir StClair Thomson's words stimulated an interesting debate, an apposite story being one of Dr. Dan Mackenzie, who said that a newly qualified young man, "regarding him the while with the dispassionate interest of a geologist scrutinising a fossil," had asked him if there was anything in medicine worth speaking of ten years ago. As Dr. Mackenzie observed, no school of medicine ought to turn out graduates of such a tragic kind. Dr. Charles Singer, in reference to the disappearance of professorial chairs on the subject, attributed the fact to the non-scientific attitude of the professors, and Dr. Arnold Chaplin pointed out that the scientific study of history began with Voltaire, whose record of Louis XIV. opened with the declaration that the author was not going to be concerned with "how kings aped fools or dallied with their mistresses, but rather how they came to be powers in the land." Dr. Herbert Spencer quoted the words of a Latin author of about A.D. 1500 who declared that history was not only useful but necessary for mortals; that just as the body is nourished by agriculture, so the mind is nourished by memories, and as the mind is nobler than the body so does the study of history surpass all other studies. Dr. Millais Culpin affirmed that if he had only one official lecture to give he would choose history to occupy that time.

With such proud declarations of faith, the Historical Section of the Society has started a new year, during which it will play its part in keeping alive great traditions and insuring that, in the words of Andrew Lang, "the little present is not allowed wholly to elbow out the great past."

ENCEPHALOMYELITIS IN DOGS

THERE seems to be some confusion about the way in which distemper may affect the central nervous system ~~in dogs.~~ According to Laidlaw[1] there is a tendency to attribute all lesions of the nervous system in dogs, except rabies, to distemper infection. This perhaps explains why a recent account of encephalomyelitis in a series of dogs by G. Marinesco, State Draganesco, and G. Stroesco[2] appears under the label of distemper, although the condition they describe closely resembles the disease reported in a series of cases by J. R. Perdrau and L. P. Pugh[3] several years ago and distinguished by them for several good reasons from distemper infection. The main histological features of the disease as described by Marinesco and his co-workers are perivascular cuffing by lymphocytes and plasma cells, diffuse zones of infiltration by similar cells beneath the meninges and ependyma in many places combined with a patchy demyelination throughout the central nervous system. In the brain the changes are principally found in the central and basal parts with a predilection for the substantia nigra. The grey matter on the whole seems to be less affected than the white, but the hippocampus, Ammon's horn, and the walls of the third ventricle are almost constantly and severely affected. The disease therefore, when compared with disease in man, bears a resemblance on the one hand to encephalitis lethargica, and on the other to the acute disseminated encephalomyelitis that occasionally follows in the train of the acute specific fevers and vaccination. The disease described by Perdrau and Pugh was histologically similar, but differed a little in anatomical distribution. Thus they described the severest lesions in the pons, medulla, and cerebellar peduncles, and found no special tendency towards inflammation in the neighbourhood of the ependyma. Finally they did not observe any inclusion bodies, whereas the Bucharest workers have demonstrated and figured intranuclear inclusions in both neurones and neuroglia cells. Perdrau and Pugh made the interesting suggestion that this form of encephalomyelitis in dogs perhaps bears the same kind of relationship to distemper as the acute disseminated encephalomyelitis in man bears to vaccination and the acute specific fevers. That it is not an essential manifestation of distemper itself is suggested by the failure of Dunkin and Laidlaw (1926) to demonstrate lesions of the same kind as those described here in fatal cases of experimental distemper.

ANTISEPSIS IN MIDWIFERY

IT has been shown that in this country the large majority of maternal deaths from sepsis are due to *Streptococcus pyogenes*—the "hæmolytic streptococcus." This organism is present in the vagina at the onset of labour in 2 to 3 per cent. of women, but in these circumstances it is usually innocuous and there is no doubt that when it causes illness it has almost always been introduced from outside at a later stage. The Departmental Committee on Maternal Mortality found that 40 to 50 per cent. of the deaths from sepsis which they investigated were a sequel to spontaneous labour or to a delivery assisted by some minor obstetric operation. These facts suggest either that the methods of antisepsis generally employed in midwifery are improperly applied or else that they cannot be relied on to cope with this particular organism. The criticism has been made that the antiseptic ritual is founded on unsuitable experiments, concerned with the killing of *Bacillus typhosus* under conditions unrelated to those of maternity work, and Dr. Leonard Colebrook and Mr. W. R. Maxted[1] have therefore gone over the ground again with the direct object of finding ways of eliminating *S. pyogenes* from the skin and mucous membranes.

Streptococci, they find, are not normally present on the skin, and if the fingers are artificially infected from cultures or pus they become free from these organisms again within a few hours. No support, however, was obtained for the common assumption that *S. pyogenes* is completely removed or killed by washing with soap and water for two or three minutes.

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[1] Medical Research Council's System of Bacteriology, London, 1930, vol. vii., p. 236.

[2] Ann. de l'Inst. Pasteur, August, 1933, p. 215.

[3] Jour. Path. and Bact., 1930, xxxiii., 79.

[1] Jour. Obst. and Gyn. Brit. Emp., October, 1933, p. 966.

and then soaking the hands in a mild antiseptic for about three minutes. These measures, even when conscientiously carried out, were found to offer no margin of safety. Streptococci were not always removed, and the normal organisms of the skin—staphylococci and diphtheroids—were present in large numbers after the treatment. Washing by itself did not get rid of the streptococci from the fingers, and only slightly reduced the number of staphylococci and diphtheroids; nevertheless, it is held to be very important, not only for its mechanical effect, but because soap solutions have a direct lethal action on many pathogenic organisms, including *S. pyogenes.* Antiseptic soaps were found to be the most efficient, while ordinary yellow household soap was better than refined toilet soap; and it is suggested that washing in a small quantity of water may be more effective than washing in running water. Most of the various antiseptics which Colebrook and Maxted tested by soaking infected hands in the solution, without previous washing, in the strengths usually recommended, did not altogether remove streptococci which had previously dried on the skin. Those which came best out of this particular test were a 2 per cent. watery solution of iodine with 3 to 4 per cent. potassium iodide, and a 30 per cent. paste of Dettol. Of these iodine is the better, but it is unpleasant to use and sometimes causes irritation; whereas dettol causes no irritation, even when used at full strength, and is said to have the advantage that when dried on the skin it confers protection for several hours against contamination by hæmolytic streptococci. No treatment, however, can remove all the organisms that ordinarily live on the skin, and sterility can be attained only with gloves. Colebrook and Maxted's recommendation is that one should wash the hands for two minutes in one and a half pints of water, with yellow bar soap, dry them, put on clean dry unsterilised gloves, and sterilise these on the hands by washing, followed by soaking in a solution of iodine or dettol, or by the application of dettol paste. This method seems satisfactory if the fingers only are to be used; but it does not permit of sterilisation of the glove at the wrist, and we doubt whether it would be safe for any operation in which the hand is introduced into the vagina, or for manipulations in which the upper part of the glove is allowed to touch the vulva or sterile towels.

The principles used in sterilisation of the hands may be applied to the vulva: it may be washed with soap and water, dried, and coated with 30 per cent. dettol cream. But the vagina is a more difficult problem. American obstetricians have advocated treatment of the vaginal wall with antiseptics such as Mercurochrome, and claim success on the indirect evidence of morbidity returns. On the other hand, the low sepsis-rate in some hospitals, such as the East End Maternity Hospital in London, where no attempt is made to sterilise the vagina, indicates that this may be unnecessary. Colebrook and Maxted tried to find out whether the vaginal wall can in fact be sterilised and report that in none of five patients treated by repeated application of mercurochrome, crystal violet and brilliant green, or dettol, was it freed from organisms. In four of the five, the original organisms—species believed to be of little or no pathogenicity—were replaced or joined after some hours by other and more virulent species, and the conclusion is reached that antiseptic treatment of the vagina is likely to do harm, except as an immediate precedent to operative interference.

The obstetrician may perhaps feel that laboratory experiments in which the hands are artificially infected with hæmolytic streptococci have not much bearing on practice. Some investigators believe that droplet infection from the throat is the most important source of streptococci; others claim that masks worn by the attendants have failed to protect the patient. Colebrook and Maxted think that contamination of the hands by coughing or from handkerchiefs may be the means whereby the hæmolytic streptococci often present in the respiratory tract are commonly transferred to the genital passages. Be that as it may, all will agree that close attention must be given to the efficiency of any method of sterilisation employed. A false sense of security is at all costs to be avoided.

DEXTROSE GIVEN BY THE RECTUM

ATTEMPTS to decide whether dextrose is absorbed from the rectum seem to have an evergreen interest. The experiments reported by W. S. Collens and L. C. Boas[1] indicate that, in their cases at least, absorption took place. Seven diabetic and 24 non-diabetic patients in a hospital ward took part in this study; in the non-diabetic group none was chosen in whom any metabolic disorder was suspected, and in no case in the whole series was there any complicating disorder of the rectum. The experiments took place in the morning when the patient was fasting, 14 hours after a previous meal. An enema was given and a sample of blood was taken; an hour after the enema, dextrose was instilled into the rectum in amounts which ranged from 20 to 100 g., in various concentrations. Specimens of blood were taken at intervals of 30, 60, and 120 minutes after the instillation, and the blood-sugar was estimated. At the end of two hours a water enema was given and the evacuation collected; the returns were analysed for the dextrose content by the quantitative method of Benedict. In the non-diabetic group of patients there was a rise in blood-sugar ranging from 16 to 25 per cent., and the amount of dextrose recovered from the evacuation varied between 10 and 27 per cent. at the end of two hours. The observers take this as indicating that as much as 90 per cent. of the dextrose administered by the rectum was absorbed. Results were comparable in the diabetic group, except that two patients out of the seven showed no rise in blood-sugar, and one showed a 20 per cent. drop; the four remaining diabetics showed a rise of 9, 21, 38, and 50 per cent. in the blood-sugar, and in all patients in this group analysis of the rectal return provided evidence of absorption. Even in the case of the patient who showed a fall in blood-sugar, the amount of dextrose recovered from the rectum after two hours was only 14 per cent. of the amount administered. Collens and Boas were not particularly interested in the rate of absorption, but were concerned to decide whether a patient who could not be given dextrose by mouth or intravenously would benefit by rectal injection. They claim that they have shown that dextrose given in this way is not only absorbed but utilised. We quote Pressman's suggestion that, in this type of experiment, dextrose not returned in the final evacuation may have undergone bacterial fermentation; he maintains that about 35 per cent. of it can disappear by fermentation with fæces in five hours. Collens and Boas, however, think that this explanation cannot account for the disappearance of as much as 90 per cent. in two hours, as found in their investigation. Moreover, in one of their cases the dextrose enema was evacuated by the patient at the end of one hour, and 68 per cent. of the dextrose had already disappeared. As additional evidence that dextrose is absorbed from the rectum in significant quantities, they mention the case of a diabetic patient in a state of hypoglycæmia due to an overdose of insulin; the administration of 25 g. of dextrose by rectum brought about immediate improvement. These observations seem to justify their statement that "although dextrose does not pass through the membrane of the colon as rapidly as through the small intestine, a sufficient amount is absorbed to warrant recognition of this method as an acceptable therapeutic procedure."

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[1] Arch. Internal Med., August, 1933, p. 317.

VETERINARY RESEARCH IN SOUTHERN RHODESIA

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THOUGH many practitioners may never have heard of melanosis coli, and many text-books ignore it altogether, much has been written about the condition since it was first described about a century ago, and a recent review by Bockus and others[1] shows that many facts have been collected. As the name implies, melanosis does not extend above the ileocæcal valve; the pigmented substance is contained in large mononuclear cells of the tunica propria of the mucous membrane and cannot be found in the epithelial cells. The view, now widely held, that the pigment is actually a melanin is founded on evidence that melanin can be synthesised in the animal and vegetable kingdoms "by the action of a ferment on certain cyclic compounds such as tyrosine, phenol, and pyrogallol." The mechanism of this reaction has been analysed by B. Bloch, who, working with a precursor of melanin (dioxyphenylalanine), found that certain cells were able to complete the formation of melanin when this intermediate substance was exhibited. On the other hand, G. F. Laidlow, who was unable to confirm Bloch's experiments, believes that the pigment is simply derived from the food and arrives in the bowel wall by a process of phagocytosis. Be that as it may, it has been noticed by many observers that melanosis coli is commonly associated with constipation, and the work of Bockus and his colleagues brings out the further interesting fact that it is when constipation is treated with the anthracene group of purgatives that pigmentation occurs. Of their group of 41 patients with melanosis, 35 gave a definite history of having used anthracene purgatives—e.g., cascara, aloes, rhubarb—usually "for years." From these figures the investigators proceed to the statement that they have obtained "a history of the use of anthracene laxatives in 100 per cent. of thirty-five cases of melanosis . . ."—which is certainly true, though the facts might be better represented by stating that of their group of 41 patients 85·4 per cent. gave a positive "anthracene history." On the other hand, it was found that of 300 patients suffering from constipation not associated with melanosis coli, only 12·3 per cent. used anthracene laxatives. The conclusion that the important factors in the ætiology and then soaking the hands in a mild antiseptic for about three minutes. These measures, even when conscientiously carried out, were found to offer no margin of safety. Streptococci were not always removed, and the normal organisms of the skin—staphylococci and diphtheroids—were present in large numbers after the treatment. Washing by itself did not get rid of the streptococci from the fingers, and only slightly reduced the number of staphylococci and diphtheroids; nevertheless, it is held to be very important, not only for its mechanical effect, but because soap solutions have a direct lethal action on many pathogenic organisms, including *S. pyogenes*. Antiseptic soaps were found to be the most efficient, while ordinary yellow household soap was better than refined toilet soap; and it is suggested that washing in a small quantity of water may be more effective than washing in running water. Most of the various antiseptics which Colebrook and Maxted tested by soaking infected hands in the solution, without previous washing, in the strengths usually recommended, did not altogether remove streptococci which had previously dried on the skin. Those which came best out of this particular test were a 2 per cent. watery solution of iodine with 3 to 4 per cent. potassium iodide, and a 30 per cent. paste of Dettol. Of these iodine is the better, but it is unpleasant to use and sometimes causes irritation; whereas dettol causes no irritation, even when used at full strength, and is said to have the advantage that when dried on the skin it confers protection for several hours against contamination by hæmolytic streptococci. No treatment, however, can remove all the organisms that ordinarily live on the skin, and sterility can be attained only with gloves. Colebrook and Maxted's recommendation is that one should wash the hands for two minutes in one and a half pints of water, with yellow bar soap, dry them, put on clean dry unsterilised gloves, and sterilise these on the hands by washing, followed by soaking in a solution of iodine or dettol, or by the application of dettol paste. This method seems satisfactory if the fingers only are to be used; but it does not permit of sterilisation of the glove at the wrist, and we doubt whether it would be safe for any operation in which the hand is introduced into the vagina, or for manipulations in which the upper part of the glove is allowed to touch the vulva or sterile towels.

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[1] Abridged report of the Director of Veterinary Research for the year 1932. Govt. printer: Salisbury, Rhodesia. Pp. 6.

[1] Bockus, H. L., Willard, J. H., and Bank, J.: Jour. Amer. Med. Assoc., 1933, ci., 1.

The principles used in sterilisation of the hands may be applied to the vulva: it may be washed with soap and water, dried, and coated with 30 per cent. dettol cream. But the vagina is a more difficult problem. American obstetricians have advocated treatment of the vaginal wall with antiseptics such as Mercurochrome, and claim success on the indirect evidence of morbidity returns. On the other hand, the low sepsis-rate in some hospitals, such as the East End Maternity Hospital in London, where no attempt is made to sterilise the vagina, indicates that this may be unnecessary. Colebrook and Maxted tried to find out whether the vaginal wall can in fact be sterilised and report that in none of five patients treated by repeated application of mercurochrome, crystal violet and brilliant green, or dettol, was it freed from organisms. In four of the five, the original organisms—species believed to be of little or no pathogenicity—were replaced or joined after some hours by other and more virulent species, and the conclusion is reached that antiseptic treatment of the vagina is likely to do harm, except as an immediate precedent to operative interference.

The obstetrician may perhaps feel that laboratory experiments in which the hands are artificially infected with hæmolytic streptococci have not much bearing on practice. Some investigators believe that droplet infection from the throat is the most important source of streptococci; others claim that masks worn by the attendants have failed to protect the patient. Colebrook and Maxted think that contamination of the hands by coughing or from handkerchiefs may be the means whereby the hæmolytic streptococci often present in the respiratory tract are commonly transferred to the genital passages. Be that as it may, all will agree that close attention must be given to the efficiency of any method of sterilisation employed. A false sense of security is at all costs to be avoided.

DEXTROSE GIVEN BY THE RECTUM

ATTEMPTS to decide whether dextrose is absorbed from the rectum seem to have an evergreen interest. The experiments reported by W. S. Collens and L. C. Boas[1] indicate that, in their cases at least, absorption took place. Seven diabetic and 24 non-diabetic patients in a hospital ward took part in this study; in the non-diabetic group none was chosen in whom any metabolic disorder was suspected, and in no case in the whole series was there any complicating disorder of the rectum. The experiments took place in the morning when the patient was fasting, 14 hours after a previous meal. An enema was given and a sample of blood was taken; an hour after the enema, dextrose was instilled into the rectum in amounts which ranged from 20 to 100 g., in various concentrations. Specimens of blood were taken at intervals of 30, 60, and 120 minutes after the instillation, and the blood-sugar was estimated. At the end of two hours a water enema was given and the evacuation collected; the returns were analysed for the dextrose content by the quantitative method of Benedict. In the non-diabetic group of patients there was a rise in blood-sugar ranging from 16 to 25 per cent., and the amount of dextrose recovered from the evacuation varied between 10 and 27 per cent. at the end of two hours. The observers take this as indicating that as much as 90 per cent. of the dextrose administered by the rectum was absorbed. Results were comparable in the diabetic group, except that two patients out of the seven showed no rise in blood-sugar, and one showed a 20 per cent. drop; the four remaining diabetics showed a rise of 9, 21, 38, and 50 per cent. in the blood-sugar, and in all patients in this group analysis of the rectal return provided evidence of absorption. Even in the case of the patient who showed a fall in blood-sugar, the amount of dextrose recovered from the rectum after two hours was only 14 per cent. of the amount administered. Collens and Boas were not particularly interested in the rate of absorption, but were concerned to decide whether a patient who could not be given dextrose by mouth or intravenously would benefit by rectal injection. They claim that they have shown that dextrose given in this way is not only absorbed but utilised. We quote Pressman's suggestion that, in this type of experiment, dextrose not returned in the final evacuation may have undergone bacterial fermentation; he maintains that about 35 per cent. of it can disappear by fermentation with fæces in five hours. Collens and Boas, however, think that this explanation cannot account for the disappearance of as much as 90 per cent. in two hours, as found in their investigation. Moreover, in one of their cases the dextrose enema was evacuated by the patient at the end of one hour, and 68 per cent. of the dextrose had already disappeared. As additional evidence that dextrose is absorbed from the rectum in significant quantities, they mention the case of a diabetic patient in a state of hypoglycæmia due to an overdose of insulin; the administration of 25 g. of dextrose by rectum brought about immediate improvement. These observations seem to justify their statement that "although dextrose does not pass through the membrane of the colon as rapidly as through the small intestine, a sufficient amount is absorbed to warrant recognition of this method as an acceptable therapeutic procedure."

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THE CASE AGAINST PRISONS

THE abolition of punishment and prisons advocated by Prof. White in a monograph reviewed on another page, is not, he reminds us, so radical or far-fetched as it might seem. It was foreshadowed by the movement for the more humane care of the insane, which has justified itself from every point of view. The unfortunate victims of mental illness are often anti-social in their conduct, and some of it seems to be dictated by very clear-cut desires to make themselves as disagreeable and as annoying as possible to those about them. The story of the campaign for the more intelligent and considerate care of these persons, for the removal of mechanical restraint and prolonged seclusion, is an oft-told tale, but even yet its lessons have not been learnt. Criminals are concrete examples of exceedingly difficult psychiatric problems, and punishment is as unscientific a method of dealing with them as it is with the aggressive reactions of the more obviously mentally ill. As those who have had to do with deranged individuals know, a few of them are exceedingly dangerous in the sense that they would commit bodily violence, and murder, maim, or endanger the lives of others wantonly; yet, as Prof. White reminds us, when the problem of dealing rationally with the insane was really tackled energetically, when restraint was really done away with, the miraculous result was that restraint was no longer found to be necessary. One by one various superstitions concerning the treatment of the insane disappeared, and with them went restrictions and restraints and frustrations, so that to-day the modern mental hospital differs very little if at all from other institutions for the treatment of human ailments.

From one point of view Prof. White points out the criminal is "just as sick as are those who are ordinarily recognised as being mentally ill, only his sickness is of a little different character, and is notable especially because of its obvious aggressiveness and destructiveness to the social structure." When approached along these lines the realm of criminology becomes one for scientific investigation, not only a search for causes is indicated, but an effort to find and apply effective remedies, at first empirically then experimentally, until the best results are obtained. While such research is proceeding, however, the conservation of the present system of detention of criminals seems to us almost inevitable.

SALE OF ALCOHOL IN FRANCE

TRACING the history of the consumption of alcohol in France during the last two decades, Prof. Paul Cazeneuve[1] comes to the conclusion that whenever hygiene is opposed to financial, economic, and political interests it is powerless to make scientific or medical truths prevail. This verdict is his reaction to the recent decision of Parliament, in agreement with the Government, to allow the establishment of 2000 new public-houses in France. Matters were very different in 1913 when, on the principle "Il ne faut pas tenter le diable," it was decreed that the number of public-houses should be limited to those already in existence. These, it was anticipated, would be reduced by processes of attrition. The present reversal of the Government's sober policy of 1913 encountered vigorous but futile opposition. Justin Godart, former Minister of Public Health, quoted in the Senate a resolution adopted last April by the Fédération Nationale des Syndicates Médicaux de France, which ran as follows: "Stupefied to learn that a financial law is about to authorise the opening of 2000 new public-houses in France, we protest against this veritable assault on the health of the nation. Are there not enough tuberculous persons, lunatics, and criminals who are patients in the hospitals in France . . . ? 2000 cabarets will yield the State two millions and cost it twenty." Dr. F. Merlin, president of the hygiene commission of the Senate, said on the same occasion that in 1855 the number of public houses was 291,000. By 1879 it had risen to 334,000, and by 1912 it was 482,036. At present the figure stands at 500,000. In Paris alone there are 13,000 public-houses for 2,600,000 inhabitants, whereas in New York, on the eve of Prohibition, there were 11,000 for 3,400,000 inhabitants, and in London only 6000 for 4,500,000 inhabitants. In Germany there is one public-house for every 264 people. In England the corresponding ratio is 1 : 430, and in Sweden 1 : 3000. In France it is 1 : 80. If the towns are taken by themselves this public-house ratio is even higher.

THE HARVEIAN CELEBRATIONS

THE annual Harveian Commemoration at the Royal College of Physicians of London will take place on Wednesday next, Oct. 18th, when the Harveian Oration will be delivered by Sir Thomas Lewis in the library of the College, at 4 P.M. The Commemoration Dinner will be held in the College on the same evening, and the annual sermon, re-established under the scheme of the Charity Commissioners for the administration of the Sadleir Trust, will be preached by the Dean of St. Paul's at the Mercers Chapel, Ironmonger-lane, E.C., at 11 o'clock in the morning.

MR. Eric Pearce Gould, surgeon to the Middlesex Hospital, has been appointed president of the Medical Defence Union for the coming year.

DR. Wilfred Harris will deliver the Savill oration of the West End Hospital for Nervous Diseases at the house of the Royal Society of Medicine at 8.30 P.M. on Wednesday, Oct. 25th. His subject will be the Traumatic Factor in Organic Nervous Disease.

THE annual dinner of the Royal Society of Medicine will be held at the May Fair Hotel, London, on Thursday, Nov. 16th, when the guests will include the Earl of Athlone and Sir Ernest Benn. On Wednesday, Nov. 29th, the president and Mrs. Warren Low will receive the guests at a reception at the Society's house in Wimpole-street. Prof. E. N. da C. Andrade is to give an address on Ultra-violet Light.

POST-GRADUATE WORK IN NEWCASTLE.—Under the auspices of the University of Durham classes meet at the Royal Victoria Infirmary, Newcastle, from 1.30 to 5.30 every Thursday afternoon till Dec. 14th (except Oct. 19th and Nov. 16th). A special course in midwifery and gynæcology is being held on Wednesdays at 3 P.M. Till Dec. 17th there will be lecture demonstrations in medicine and surgery every Sunday morning at 10.30. Further particulars may be had from the registrar, College of Medicine, Newcastle-upon-Tyne.

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[1] Ann. d'hyg. pub., indust. et soc., September, 1933.

THE PREVENTIVE ASPECTS OF MEDICINE

The first of a series of twenty lectures to be delivered on Thursday afternoons during the winter session at King's College Hospital Medical School is printed in full below. It is our intention to publish subsequent lectures in this series.

THE STUDENT'S PREPARATION

BEFORE I came to King's College in 1895 to be on the staff I had already been inoculated with the preventive medicine bacillus. It is a very actively motile organism; you never know where you have it or where it will turn up next. I caught it, I think, because I had been engaged for a couple of years under the National Leprosy Fund Committee. This was a research committee advised by Mr. Jonathan Hutchinson, Sir Guyer Hunter, and Sir Joseph Fayrer, and one or two others, who were engaged in the business of exploring leprosy. I assisted in a subordinate capacity, both in the bacteriological department and in the history of leprosy. That was where I picked up this preventive medicine bacillus. I found that leprosy had no remedy and yet it disappeared. That drew my mind very forcibly to the extraordinary fact that the prevention of a disease is much more important than anything else. Leprosy did not disappear rapidly, but it had been prevalent in England—no doubt confused with other diseases, but so prevalent that there were more than 200 hospitals in the country devoted to leprosy and its allied conditions. Now there is not one public hospital in England devoted to leprosy. The more you reflect upon this fact the more astonishing you will find it. All over the world, with the exception of certain endemic areas, you have a disease which was once a scourge and is now, in this country, abolished.

After I left King's College in 1899 I became a medical officer of health in a metropolitan borough, and also under a county council. There I got involved still more with preventive medicine, and in 1907 I went to Whitehall. I think I may say, therefore, that I have come to this place this afternoon by a very simple and natural order of events. At Whitehall during the last 27 years I have seen and heard a good deal about preventive medicine every day of my life. After I had been there some two or three years a duty was imposed upon me to visit all the medical schools in the country which claimed financial aid from the Exchequer. This gave me further insight into what medical education was actually doing.

We are here to consider the preventive aspects of medical education. The subject is a very live one: for one reason because people are talking about it; and for another reason because the General Medical Council is engaged in revising the present medical curriculum which will affect us all.

ASPECTS OF MEDICINE IN GENERAL

It may be a convenient way of approach if I remind you that Medicine, though very largely a unified corpus of knowledge, has different aspects. There are not different kinds of Medicine, but it has different functions to fulfil and discharge.

Therapeutic medicine requires no observation from me at the moment, except to say that all healing and repair of tissue should be in fact in some degree, and in most cases in an overwhelming degree, preventive. Then there is *preventive medicine*, for the individual and the community. You must all be practitioners of preventive medicine if you are going to make good physicians in the time to come. There is preventive medicine applicable to the individual, and there is also preventive medicine applicable to communities, commonly called public health. The public health service and the practice of preventive medicine for the individual patient are not the same thing, or, indeed, identical in any way. You may have a public health service that is not preventive medicine, but preventive medicine applied to the community, and not to one person only, concerns the *public health*. Thirdly, there is *conservative medicine*.

When one thinks of conservative medicine one finds that it includes two fundamental principles. At its foundation is, first, what may be learned in nature, as expressed in Darwin's "Origin of Species" in 1859. He explained that nature consisted of various forms of life, and the nurture of species in relation to their environment. He knew there was variation, but he knew also that the environment had an influence on the individual, whether bird, beast, or man. That is the first foundation of preventive medicine; to relate the individual species to its environment with success. Herbert Spencer, about the same time, wrote that phrase which it is good for us to reflect upon: "Perfect correspondence with environment would be perfect life"; by which he meant, I suppose, that unless a bird corresponds exactly with its environment it will come to an untimely end. But the truth about bird or beast or man is the same: it is the adjustment of the individual and the species to the environment.

Secondly, though it came later and from quite different sources, there was the generalisation of Claude Bernard, the greatest of the medical French scientists of his time. In 1848 he announced what he called his Synthesis, his unified conception of what things meant. He found a constant internal environment in man set in a constantly variable external environment. And health, or hygiene in the constellation of Medicine, is the maintenance of that internal environment so that it may correspond with its external environment. The essence of this constancy has many examples in the proportion of sugar in the blood, the constancy of the blood content, the body temperature, the renal secretion, the endocrine secretion, &c. Preventive medicine is directed to fortifying that constancy, to maintaining it, in order that the individual may contend successfully, and through a long period of life, with the variablenesses of his external environment.

PREVENTIVE MEDICINE IN THE CURRICULUM

The General Medical Council has two primary duties in regard to education. It is the Council's business to recommend to the licensing bodies what they should teach. When a university gives its imprimatur to a man who has followed, generally speaking, this course and has satisfied the examiners, he is eligible for registration by the General Medical Council.

In the second place the Council have the Diploma of Public Health—the D.P.H.—for which the Council is responsible under a separate Parliamentary statute, and it lays down rules for that diploma. Parliament decided to leave all questions of recommendations as to ordinary medical education to the Council. You notice the difference in the word; when qualifying men for State service, Parliament said there must be rules and not recommendations—so there are rules for the D.P.H. as there are not for other medical qualifications, because those who hold it are liable to be called upon by the State to serve in certain responsible public positions.

The General Medical Council is now engaged in a revision of the existing medical curriculum, and is carefully considering what can be done to introduce, even more emphatically than in 1922, the scientific, clinical, and preventive aspects of medicine into the curriculum. The triumphs of preventive medicine have become so obvious that the whole population has demanded to share in the advantages derived from them. It is not a stunt or fad of the General Medical Council to introduce the preventive aspects of medicine more emphatically than in the past. They have no alternative; they must appreciate the advances of the science and art of medicine since the bacteriological period of the 'nineties. Some critics propose that there should be more lectures on preventive medicine in the fourth or fifth year. Others would include attendance at special preventive clinics; that it would be a good plan if every student attended at some time in his curriculum at a tuberculosis dispensary, a venereal disease clinic, a children's clinic, a maternity centre, and so on. It has been suggested that medical students could pick up their preventive medicine if they attended some of these special preventive clinics.

The third proposal is to make preventive medicine a subject for special examination, or at least for invariable inclusion.

The fourth is to introduce the preventive medicine aspect into all subjects of the curriculum: chemistry, physics and biology; physiology and pathology; and the clinical subjects. That is a plan which has much to commend itself. I am not of those who think that clinical medicine and clinical surgery have had their day. Men who talk about physiology, pathology, and bacteriology in preventive medicine apart from the clinical examination of cases affected with a malady are not wise in their generation. Surgery may be claimed as one of the greatest preventive instruments of science and art we have, and operations within the scope of preventive surgery will at once occur to you. Clearly, aseptic surgery is preventive surgery. When it is not it becomes septic surgery. Circumcision is an example, perhaps the oldest, of all examples of preventive surgery. There is the operation for hernia; is that not prevention? And what of the removal of enlarged tonsils and adenoids; the treatment of spinal curvature, flat-foot, fracture, dental caries, gonorrhœal ophthalmia, rickets, tuberculosis; operations to cure the results of poliomyelitis, appendicitis, and so on?

Or take midwifery; we shall never get down to the problem of an excessive maternal mortality unless we apply preventive methods to our obstetrics. Lacerated cervix, possibly resulting in cancer; preventive surgery at the time of delivery and in the post-parturition stage; prevention of post-partum hæmorrhage, antisyphilitic treatment of the mother in order to save the child—all these activities are clearly prevention. In fact, from antenatal treatment until you have got the baby and got your mother out and about again, the larger part of obstetrics is preventive; the application of prevention to "disease" and risk which may arise in a normal function of nature. You may reflect to yourselves that there is no malady which fills a husband with so much remorse as the death of his wife in childbirth. Death in childbirth upsets the home, takes the mother away from the other children, and creates one of the profoundest problems of Preventive Medicine.

Pædiatrics and infant care should and can be preventive. When the mothers of a nation take care of their children under one year of age, you all know what they can do. They can reduce the infant mortality by one-half inside a generation, one of the most impressive triumphs of the principle of preventive medicine. The control of infectious diseases constitutes another example of practical prevention.

THE RÔLE OF THE GENERAL PRACTITIONER

The individual doctor is the exponent of the practice of preventive medicine, the most effective of all; the most effective adviser to the persons who are willing to give him their confidence and take his counsel; first, because he gets the patient, and secondly, because he is asked by the patient certain questions. I am very much on the side of the private practitioner; he is the man who is delivering the goods to-day; the scientific triumphs of preventive medicine are being applied by him.

He first gets the patient and the patient asks his advice. Moreover, he is entitled to the credit of practical prevention, for he invented it. We must not forget that. William Harvey, private practitioner and physician to St. Bartholomew's, demonstrated the circulation of the blood, and established that the blood is of the greatest import to man, because it is the blood which both nourishes him and may generalise his infections; Sydenham, the great practitioner in Pall Mall, the old doctor who joined few societies, but who became the father of English medicine because of his work as observer and scientist, because of his clinical acumen and wise understanding; Richard Mead, the practitioner of the eighteenth century, who worked at the prevention of the Plague; Fothergill, and "putrid sore-throat." Of Heberden, Huxham, and Lind, the first worked at the prevention of infantile disease, the second at scurvy, the third studied tropical hygiene and the health of seamen. Sir George Baker observed and prevented the abdominal colic which arose from lead poisoning; Withering made known the science of water analysis and climatology; Sir John Pringle studied the health of armies; Edward Jenner, a village practitioner in Gloucestershire, introduced vaccination in 1798; Thackrah, of Leeds, showed how to prevent industrial diseases in 1831; Dr. Michael Taylor, of Penrith, who first demonstrated milk-borne disease; in Manchester in the eighteenth century Haygarth, Ferriar, and Percival showed how to prevent small-pox, typhus, industrial diseases, hospital fever, and introduced isolation; Willan, Trotter, Cadogan, and Lettsom worked at the prevention of alcoholism in the eighteenth century, and the beginnings of the prevention of infant mortality; and there was Charles White, of Manchester, who was able to deliver his cases without puerperal sepsis, and teach lessons which, when we learn them, will enable us to do the same. These were remarkable contributions from medical practitioners to the art of Preventive Medicine.

When you enter practice, there are certain questions the patient will ask: (*a*) "What is the matter with me?" (*b*) "What produces this? Why have I got it?" (*c*) "Can you put me right?" (*d*) "Shall I get better?" And, just as he is slipping out of the door, (*e*) "By the way, doctor, how can I escape getting this thing again?" If you will look at the note in your hand, you will see the words *diagnosis, causation, therapeutics, prognosis, prevention.* Those are the five issues. Those are the five questions and the five means of answer which everyone of you in practice will meet with sooner or later.

PREVENTIVE MEDICINE AND THE COMMUNITY

Lastly I come to the work of preventive medicine which is carried out by the State and by the local authorities. The local authorities are county councils, county boroughs, boroughs, urban and rural district councils. They exist all over England, so that there is no part of England that is not within the compass and ambit of a local authority. They raise the local rate and carry on the local government under the general supervision of central administration. Thus all the public health government in England is carried out by local authorities under the supervision of the State.

Let me remind you that, in addition to the duties imposed upon you by your professors, lecturers, teachers, and examiners, there are some duties put upon you by the State. First, you have to certify birth and death. You have to record when a child is born or a person dies, and you have to add the cause of death. It is a difficult thing; it is done more and more correctly every year, but not yet perhaps with sufficient accuracy. Secondly, you have to notify infectious diseases when you see them; therefore you have to know when you are seeing them. You have to diagnose and notify industrial poisoning. You have to be able to vaccinate, effectively and safely—very simple, if you know how to do it. These are "musts," not "mays," and if you cannot do these things you may in the last instance be summoned to a court of law to explain why you cannot do them. You must be able to advise a local authority on any point on which it consults a registered medical practitioner in relation to the poor—and as we are all poor nowadays, that is a wide obligation! You must know about dangerous trades; about poisons; about unsound food. You must know a mental defective child when you see it, and it is not always easy to differentiate a mentally defective person from a normally mentally dull person. You have to know epilepsy; you have to be able to meet all the difficulties of midwifery, and know what to do when a midwife in difficulty calls for your help. You must understand about dangerous drugs, how to use them and how to avoid them. So the general practitioner is the person who has imposed upon him by his registration the statutory obligation to undertake a number of preventive measures, whether he likes them or not.

One word about public medical services. You may think perhaps they have been multiplied too rapidly; anyhow, there they are. There is the poor-law medical service, employing about 4000 practitioners. The voluntary hospitals and municipal hospitals have all to be staffed by competent medical men who understand the inter-relationship between them. There is the protection of food-supplies, the maternity and child welfare centres, and the school medical services. There is the insurance service; Health Insurance is the very essence of prevention. The business of insurance is to assess the capacity of the body to live, and when you are examining an insurance case you are assessing the capacity of that man to live. The school medical services are also assessing the capacity of the child to receive the education which the State provides. The assessing of human capacity is the basis of prevention. The Metropolitan Life Insurance Co. of New York, the biggest organisation of its kind in the world, has become de facto a strong public health and communal medical service. It is one of the most comprehensive administrations concerned with the principles of prevention. These points may remind you that the State has accepted some responsibility for the training of the medical man, for men and women as sanitary inspectors, nurses, midwives, and other allied functions, and provides substantial financial assistance to these ends.

I welcome you as new medical men and women who are, I hope, going to be the heralds of preventive medicine to the new generation and in the new days upon which we are about to enter, and I wish every success to this course of lectures.

GEORGE NEWMAN, K.C.B., M.D.,
Chief Medical Officer of the Ministry of Health and the Board of Education.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

THE following appointments are notified: Surg. Comdrs. S. R. Johnston to *President* for post-graduate course; J. C. Sinclair to *Defiance*; F. C. Hunot to *President* for Medical Dept., Admiralty; and J. B. Crawford to *Pembroke* for R.N.B.

Surg. Lts. A. K. Stevenson to *Champion*, and H. D. Plunkett to *Sutton*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. C. Mason to *Warspite*.

ROYAL AUSTRALIAN NAVY

Surg. Capt. L. Darby to *Victory* for R.N. Hosp., Haslar.

ARMY MEDICAL SERVICES

Col. J. Mackenzie, late R.A.M.C., having attained the age for retirement, is placed on retd. pay.

Lt.-Col. C. R. Millar, from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Maj. H. Gall to be Lt.-Col.

Maj. W. Bligh relinquishes his temp. commn. and retains his rank.

TERRITORIAL ARMY

Col. T. B. Wolstenholme vacates the appt. of A.D.M.S., 42nd (E. Lan.) Div., T.A., on completion of tenure.

Lt.-Col. and Bt. Col. J. K. Lund, from R.A.M.C., Gen. List, T.A., to be Col., and is apptd. A.D.M.S., 42nd (E. Lan.) Div., T.A.

Lt. G. P. Smith to be Capt.

ROYAL AIR FORCE

Flight-Lt. O. S. M. Williams and Flying Officer J. F. Dales are granted permanent commissions in their rank.

The undermentioned are granted short service commissions as Flying Officers for three years on the active list: L. S. Everett, G. Gilchrist, and W. P. Griffin.

COLONIAL MEDICAL SERVICES

Dr. E. M. Clark has been appointed Medical Officer, Somaliland; Dr. G. M. Gibbon, District Medical Officer, Cyprus; and Dr. H. F. Hustler, Medical Officer, Gibraltar; Capt. G. H. Gallagher has been promoted Assistant-Director of Medical Services, Gold Coast; and J. M. Hall, Senior Sanitary Medical Officer, Jamaica.

BOSTON ISOLATION HOSPITAL.—During his recent tour of inspection of local government areas, Sir Hilton Young, the Minister of Health, opened a new isolation hospital which has been erected at a cost of about £12,000 by a joint isolation hospital committee representative of the Boston town council and the Boston rural district council. The Minister congratulated the authorities concerned upon the attractive appearance of the building, and emphasised the desirability of making the institution part of a coördinated scheme covering the whole of Lincolnshire.

POST-GRADUATE LECTURES

WE continue this week to publish extracts of some of the lectures delivered at short post-graduate courses held at London teaching hospitals. Dr. Griffith spoke at Westminster, Mr. Cope at St. Mary's, and Mr. Davis at Charing Cross.

SORE EYES

(MR. ARTHUR D. GRIFFITH)

I PROPOSE confining myself to consideration of a few very common conditions.

Mucopurulent conjunctivitis.—Conjunctivitis of the type popularly described as "cold in the eye," or "pink eye," is most commonly caused by the Koch-Weeks bacillus or by the pneumococcus. Of these the latter form has the more sudden onset, which may be so sudden, indeed, that it is difficult to convince the patient that he has not a foreign body in his eye. If there is mucopurulent discharge on the lashes or there are flakes of muco-pus floating in the tears in the lower fornix of the conjunctiva, the diagnosis is evident. If there is no discharge, and the eye is only red and weeping, the diagnosis depends on observing that the iris is bright and movable, that the injection of the globe is confined to the brick-red conjunctival vessels, and that the conjunctiva of the lids is red and thickened.

Treatment consists in lavage, using mild antiseptic drops, and greasing the lashes at bed-time with vaseline, so that they shall not stick together during sleep. This last precaution is important, because if the lids are allowed to get glued together during the night, recovery will be delayed. The composition of the lotion is not very important, except that it should not be irritating. It should be approximately isotonic with the tears; it may be 2 per cent. boric acid, or 1 per cent. salt solution, or better a mixture of salt, borax, and sodium bicarbonate. The eyes should be washed with the lotion thrice daily, and after each washing a drop of some mild antiseptic should be dropped within the lower lids. In the conditions we are considering the drops may be Collosol Argentum, or 10 per cent. Argyrol, or 5 per cent. Protargol.

Angular conjunctivitis is less common than these, but still quite common. Here the redness of the conjunctiva is most marked at the corners of the eye. It may be recognised also by the fact that the redness extends on to the intermarginal margin of the lids, and even a little on to the skin surface. There is very little discharge, just a flake or two of muco-pus in the tears in the lower fornix. You should always associate in your minds angular conjunctivitis with zinc, because zinc salts are specific in the treatment of this condition, and unless they are used it will persist. A suitable lotion is 2 per cent. boric acid with the addition of gr. 1 of zinc sulphate to the ounce, the lotion to be diluted with an equal volume of hot, boiled water for use.

Chronic conjunctivitis.—This is difficult to treat, and is one of the main curses of the life of the ophthalmic surgeon. Unless one is content with merely palliative treatment one must try to understand the underlying cause in each case. Often it is not possible to discover this, and then the patient should be told that his trouble can be controlled but not cured, and that he must be prepared to continue treatment indefinitely. The cases most amenable to treatment are those due to eyestrain. The desk worker with uncorrected, or imperfectly corrected, hypermetropia or astigmatism is liable to get his conjunctiva chronically injected, and the careful correction of his refractive errors by suitable spectacles will cure or greatly relieve the conjunctivitis. Another cause of chronic conjunctivitis is repeated irritation of the conjunctiva. Tobacco smoke is often responsible for this, especially the smoke-laden atmosphere of the card-room. Late hours and alcohol increase the trouble, and the patient who *nightly sits up late* playing bridge and then comes to the doctor asking to be cured of his chronic conjunctivitis is asking the impossible. Many people find that their eyes give them no trouble when they are living in the country, but that they feel hot and gritty and weep when they come to London. The patients often attribute this to tar and motor-car exhaust gases in the atmosphere of the town, and perhaps they are right.

The "gritty" feeling of which patients complain so constantly is due to the fact that the hyperæmic conjunctiva secretes more mucus than usual. The mucus forms a film over the front of the eye and is rolled up by the blinking movements of the upper lid into a cylinder which lies between the upper lid and the globe, which it irritates. Patients often tell one that on waking in the morning they find it difficult to open the eyes. This is because it requires some muscular effort to roll up the film of mucus which has been deposited during the night. If the mucus persists as a film over the cornea for some time, it causes dimness of vision and rainbow haloes from diffraction of light. These haloes can be distinguished from those of glaucoma by their being observed early in the day rather than in the evening, and by their disappearing on rubbing the eyes.

The most difficult class of these cases is that in which the resistance of the patient to infection has been impaired by a disturbance of metabolism, especially by remote infection. The possible sources of such infection are many. Probably the commonest source, and the first to be investigated, is the teeth. It is not so much "open" infection, caries, and pyorrhœa, that is the enemy in this connexion, although it does harm by infecting the alimentary tract lower down, but "closed" infection, that is, infection of the bone about the apex of a tooth, this including the so-called "apical abscess." Diagnosis can only be made after careful consideration of good dental radiograms and calls for the greatest judgment. Many surgeons hold that a dead tooth is necessarily infected and must be removed, but while it is true that there are almost no limits to the damage that may be done by a single infected tooth, on the other hand patients vary in their resistance to infection, and bone rarefaction may be followed by bone sclerosis, as shown in later radiograms. One can also do a patient a grave disservice if one condemns, as infected, teeth which are only suffering from malapposition; we leave him no better of his original trouble, but with added malnutrition from inability to masticate. I would not have you belittle the part played by dental infection in causing disease; I only urge that dental extraction be carried out not indiscriminately, but after careful consideration of all the conditions. In these cases one must collaborate with a capable dental surgeon who is accustomed to interpreting dental radiograms. Chronic tonsillitis, where there are large crypts containing stagnant infected matter, calls for tonsillectomy. Stasis in the large intestine is a frequent cause of chronic conjunctivitis. Some help in treatment may be got by examination of the fæces. If a hæmolytic streptococcus can be isolated, a vaccine may help the patient. A relative count of culture colonies of *B. welchii* and *B. coli* will give an index of putrefaction in the colon. If the proportion of Welch's bacillus is unduly high, good is likely to come from encouraging the growth of *B. acidophilus* in the large intestine. Large doses of lactose given on an empty stomach provide the latter organism with the food it requires, and enable it to flourish at the expense of putrefactive organisms. Aperients are necessary, preferably a good paraffin agar-agar emulsion daily. Other sources of infection are the nasal sinuses, the urinary tract (cystitis and pyelitis), the genital tract, and the gall-bladder.

As local treatment of chronic conjunctivitis we rely mainly on astringents. It is a good plan to begin treatment by painting the palpebral conjunctivæ with 2 per cent. silver nitrate solution daily for a week. Silver nitrate has the advantages that it is an active antiseptic in high dilutions, and that it does not readily destroy lysozyme, the natural antiseptic in the tears. Used in this way silver nitrate coagulates the superficial epithelial cells, which are cast off, and the theory is that in this way organisms which have embedded themselves in the conjunctiva are destroyed. After this an astringent lotion is ordered. Patients vary in their tolerance of astringents, and the lotion first prescribed may contain only zinc sulphate gr. ½ to the ounce of boric acid lotion. As tolerance is established the proportion of zinc is increased, until the lotion contains zinc grs. 2 to the ounce. The patient must be told that he is to follow the treatment for at least three months.

Blepharitis may complicate chronic conjunctivitis. It is described as either blepharitis squamosa or blepharitis ulcerosa. These terms are synonyms for the common skin diseases, seborrhœa sicca, and eczema. One must not diagnose blepharitis because there is dried discharge on the lashes. If on bathing away the discharge the skin on the lid is found to be healthy, the condition is one of conjunctivitis. In blepharitis squamosa the skin is red but not ulcerated. These patients always have scurf on the scalp, and often also on the eyebrows. The eye condition is helped by treating the scalp with a hair-wash containing mercury or resorcin, and for the eyebrows and eyelids a mercurial ointment, such as 1 per cent. ammoniated mercury, or Pagenstecker's 1 per cent. yellow oxide of mercury, should be used. An essential preliminary to applying the ointment is thorough cleansing away of crusts with an alkaline lotion. In many cases of blepharitis there is an inherited lack of resistance to staphylococci or other organisms, and red eyelids occur in many members of the same family.

Ectropion.—In old persons with chronic conjunctivitis the thickening of the conjunctiva and increasing laxity of the orbicularis muscle cause the lower lid to fall away from the globe so that the lower punctum lacrimale is no longer applied to the eye and tears cannot enter it. The constant weeping of the eye causes eczema of the skin, with consequent increase of the ectropion. In slight degrees the simple operation of removing some of the posterior wall of the canaliculus allows the tears again to enter it and stops the weeping. When the condition is more advanced it is necessary to do the operation of blepharoplasty, which, by shortening the lid, pulls the punctum again in contact with the eye.

Lacrimal obstruction.—In all the diseases described the condition of the two eyes is approximately the same. When conjunctivitis is confined to one eye, or is far more marked in one eye than the other, one must suspect a one-sided cause for the trouble, and this is likely to be obstruction to the tear passages on one side. Diagnosis is made by attempting to syringe water through the lower canaliculus to the throat, and treatment is operative, usually excision of the infected lacrimal sac.

SOME COMMON MISTAKES IN SURGICAL DIAGNOSIS

(MR. V. ZACHARY COPE)

THESE remarks are based upon a survey of the last thousand cases seen by me in private practice. I have gone over them chiefly to note the mistakes which I have made, but have in addition picked out some instructive cases in which the mistakes were made by the practitioner in charge of the case. Some mistakes are unavoidable, but many would be avoided by fuller examination. Few occur from mere ignorance.

Breast cases do not furnish many errors. We need not dwell on the lipoma of the breast which I took for a cyst, for a lipoma here is very rare; but of greater import was the failure in one case to distinguish between a deep thick-walled cyst and a cancer of the breast. Under an anæsthetic I put a needle into the lump but withdrew no fluid, and the diagnosis of cyst was only made after excising the whole swelling. In general I do not favour the needling of breast tumours because with a thick-walled cyst the fluid may not be reached, whilst a cyst containing clear fluid may still have a cancer forming within it. Still more instructive was the mistaking of a soft, round, and apparently fluctuant swelling, not adherent to the skin, for a cyst when it was actually a carcinoma. These cases point the moral that every lump in the breast which can be felt with the flat of the hand should be excised completely. I have several times seen the perfect simulation of a fibroadenoma by a cancer, twice in women under the age of 30. Fat necrosis of the breast is rare and almost impossible to diagnose. I took such a case to be an abscess. The only other mistake in breast-diagnosis was that in which I thought a large hard swelling in a woman of 70 was probably a cancer or thick-walled cyst, whereas in fact it was a mass of chronic inflammatory tissue—true chronic mastitis.

Swellings in the neck often give rise to doubt but seldom to errors in diagnosis, for here exploration is easy. Some doctors forget that an early biopsy is better than a late autopsy. In case of doubt it is far better to excise a gland than to wait and see. Also remember that the nasopharynx, the base of the tongue, and the pyriform fossa are places where a small carcinoma may hide itself until glands in the neck are quite a large size. The chronicity of some glands in the neck is remarkable. I once removed a gland which had been present in the neck of a woman of 72 for nine years, and the histological report said lymphosarcoma. You may think the pathologist was wrong, but it is quite as likely that your ideas of cancer are wrong. Malignant disease moves with the speed of the second-hand in infancy and adolescence, slows down to the rate of the minute-hand in middle age, but in old people creeps on almost imperceptibly like the hour-hand of the clock. With carcinomata in old people there is not quite the same urgency for operation but the prognosis is better if the growth is adequately removed.

Rectal cancer is frequently diagnosed late from the omission of a digital examination of the rectum. Occasionally a large mass of hard fæces in the rectal ampulla may be too large to be evacuated, and by its constant irritation may cause tenesmus and the passage of mucus, and so simulate the symptoms of cancer. One of my patients was thought by the practitioner to have cancer but was proved to have this condition. Another case points its own moral. A patient with an ulcer at the anal margin had been treated elsewhere by radium applications at three-weekly intervals for a period of 18 months. When I saw him the simulation of epithelioma was complete, so I advised excision. This was done successfully and the ulcer proved to be tuberculous. No doubt the induration was due to the reaction to the radium. Remember that if radium is likely to do good its effects will be obvious at the most within three months.

Within the last 18 months I have seen three patients with rectal symptoms which followed immediately upon the administration of an enema, and I think these were cases of trauma due to the enema. Fluid may easily be forced through a minute abrasion of the mucosa and lead to ulceration and pelvic cellulitis. The symptoms may be initial collapse in severe cases, but merely discomfort in others. Fever, tenesmus, and frequent passage of mucoid stools may follow. Mr. H. H. Rayner drew attention to this type of case two years ago, and I am sure it is often unrecognised. Healing takes many weeks. It is wise always to give an enema by funnel and tube.

It is easy to mistake some cases of *cholecystitis* for appendicitis, since the irritative fluid tracks down to the right iliac fossa. Only one such case is in this list, since experience makes the mistake rare. I made a tentative diagnosis of cholecystitis in a woman, who at operation was found to have a normal gall-bladder but innumerable fine soft adhesions between the liver and diaphragm, which were easily broken down by the finger. She had suffered from influenza and pleurisy some weeks before the onset of the pain, and I think the inflammation had gone through the diaphragm. This class of case is entirely new in my experience. She was cured of her pain by the operation.

Wrong interpretation of *phrenic shoulder pain* caused a doctor to ring me up and say he had gall-stones because of pain felt at the tip of the shoulder. I told him gall-stones seldom caused this symptom; actually he had right pleural effusion. Only once in this series was gall-stones diagnosed on full clinical grounds without a positive finding at operation, but in this case both myself and another surgeon thought the diagnosis almost certain. We were wrong. Only evidence of old perityphlitis was found. In one case a large gall-stone lying in a twisted gall-bladder directed towards the umbilicus closely simulated a cancer of the pylorus which I had provisionally diagnosed before operation.

A considerable group of wrong diagnoses centre round the *appendix.* Twice in this series a cyst of the ovary simulated appendicitis. Careful rectal examination can usually differentiate between them. Once I made the quite unavoidable mistake of diagnosing appendicitis when in fact there was a very acute typhlitis without involvement of the appendix. Once cholecystitis was diagnosed when the disease turned out to be in the appendix. Twice I found it impracticable to distinguish between inflamed ileocæcal glands and appendicitis. As a rule the glandular inflammation gives rise to short sharp attacks of colicky pain, vomiting is less frequent than with appendicitis, and the sequence of symptoms is not so definite. But occasionally it is impossible to distinguish with certainty. The two appendicular cases which caused me most anxiety were in children. The first was a child of 3 with abdominal pain but some indefinite signs at the base of the right lung. The abdominal wall moved well, and I noted that the alæ nasi moved. Vomiting had preceded the onset of the pain. On these grounds I was for temporising, but a physician who was equally doubtful advised exploration and an acute appendicitis was found. My general experience is that when after a full examination you are doubtful whether the abdomen or chest is the site of the trouble it is actually the abdomen. The second case was that of a boy who had the history and physical signs of pelvic peritonitis due to appendicitis; I found the appendix inflamed but unperforated, and the after-course of the case showed that the abdominal symptoms were but part of an influenzal septicæmia. Such cases are fortunately rare.

I do not think it is sufficiently realised that *pyelitis* is often accompanied by considerable perinephritis, leading to resistance in the iliac fossa. Though it is better to operate than to leave a diseased appendix to perforate, one can usually distinguish between the two lesions, and I have several times had to refuse to operate in such cases.

Diverticulitis furnishes quite a number of diagnostic problems. It is sometimes impossible to say before opening the abdomen whether a pelvic peritonitis has its origin in the appendix or a diverticulum of the colon. Usually the history and sequence of symptoms help the decision but they may fail to do so. Abscesses resulting from diverticulitis may form insidiously, and twice I have been in doubt as to the diagnosis before operating. The common left iliac pericolitis due to inflammation round a diverticulum of the iliac colon is usually easy to diagnose, and as a rule does not need operation.

Practitioners often make mistakes in diagnosing *intestinal obstruction.* Strangulated femoral and small umbilical herniæ are often overlooked. It is also forgotten that retroperitoneal extravasations may cause intestinal paresis with vomiting and distension. A year ago I saw such a case where a large hæmatoma from rupture of the kidney caused symptoms of obstruction. The history and the presence of a loin swelling with hyperæsthesia of the area of the twelfth dorsal nerve made the diagnosis clear.

The *distended bladder* is a perennial source of wrong diagnosis. Twice during the past year I have been called to patients thought to be suffering from subacute intestinal obstruction only to find that in each case the bladder was distended up to the umbilicus. In one case the simulation of obstruction was due to uræmia, but in the other I believe the mechanical pressure on the colon by the bladder may have caused it. Some years ago I saw a child in whom the symptoms of acute obstruction were due to pressure of a distended bladder on the rectum. The passage of a catheter was followed by relief of the obstruction. I have seen this distension of the bladder backwards and not upwards on several occasions.

Finally remember that atypical severe pains in the abdomen may be due to *tabes.* Not long ago I was asked to see a man who had recurring attacks of very acute epigastric pain—like biliary colic—but unaccompanied by jaundice. I saw him in an attack, but the atypical nature of the pain made me examine the knee-jerks and pupils where I gained the clue to the gastric crisis. On the other hand, do not think that because a patient has tabes his abdominal pain must be due to a gastric crisis.

good doctor. Put like that it sounds as though I were a little sententious, and I probably was. Anyway, as those I was addressing were presumably all committed to medicine as an occupation for the rest of their working lives it was clearly rather late in the day to consider whether they were fitted for this pursuit or not. And I don't suppose for a moment that anything I said induced a single student to give up a mistaken vocation before it was too late. I am not going to speak this evening about the material of which good doctors are made, but of the career which medicine offers to all healthy boys and girls, possessed of an average intelligence quotient, who want scope for the exercise of their personalities and whatever other gifts they possess. No doubt a good doctor, like a good poet, is born and not made. But it really is impossible to say in advance who will make a good doctor. Medicine holds out so many and such different possibilities that this consideration need not deter anyone from entering it who seems not to have received a "call" for it. There are probably some here this evening who get spasms of doubt as to whether they are cut out for the career of medicine. There may even be some whose doubts are more continuous, so much so that this exercises a depressing influence upon their work. I don't think they need worry. I think this feeling is natural to many people who are still in the noviciate stage, whatever it may be that they have undertaken; indeed—and this is the point I want to make—I believe this feeling is not uncommon in that very temperament which, later on, finds the practice of medicine to be extremely congenial, and whose work is therefore very satisfactory. If I yield for a moment to the temptation to be personal, I will confess to you that I have been conscious of this feeling of doubt about my own choice of a career at frequent periods ever since I began the study of medicine. I still sometimes wake in the night, in what is called—perhaps with more expressiveness than actual truth—"a cold sweat," and with a sense of panic lest I may have missed my vocation. And I have, even yet, never quite forgiven Fate for denying me, what at the time I thought so essential, the leisure and the opportunity of thinking out, fully and carefully, the pros and cons of the profession into which I was, as it were, inveigled. I remember how fearfully and tentatively I approached the final decision. I dallied first with biology, then with physiology, teaching both of these subjects before finally committing myself. Then, when the step was at last taken, I remember the qualms and the doubts that assailed me. Had I but realised the vastness of the sphere presented by medicine I might have spared myself all this mental agony and stepped off boldly, assured that somewhere in this large and ample country I should find a congenial spot for the exploitation of whatever gifts fortune had bestowed upon me. Since that time medicine has broadened out more and more, and to-day there is a positively staggering choice of activity for young men and women who enter its ranks. So you need have no fear. If you do not find a niche of some sort you are dull dogs indeed.

It is considerations like these that lead me to speak of medicine as a career. It is much more than a business, it is even more than a profession; it *is*, indeed, a career. At almost any point you may either remain, or branch off, or continue. You may remain, and do excellent work, in the pure sciences. You will have wasted no time, and you will have a life-interest, and earn a livelihood as a teacher. You may branch off into pathology—whether morbid anatomy or bacteriology or biochemistry—and again you will have open to you a field for active effort and the means of living. You may feel the compulsion of uniting the scientific spirit to a close contact with your fellow men, and so pursue the path to what we must regard as the natural end of the medical curriculum, the general practitioner. But before you finally decide that this is your proper sphere, you may branch off yet again, and take a special line. If you have a sceptical mind and a critical spirit, and the craftsmanship of medicine does not attract you, you will take silk and train yourself to receive briefs of obscure and difficult cases, analysing them, supplementing them, giving judgment concerning them—in short, you will become a consulting physician. So complex a thing is the human body, and so elaborate with its infinite permutations and combinations is pathology (I use this word in its widest and truest sense), that it is difficult to believe that there will not always be need for men and women of this type in medicine. For the popular idea that diagnosis, and the selection of an appropriate programme of treatment, can be achieved without the operation of the human mind is, I believe, a fallacy. I say this *pace*, the craving amongst laymen for the verdict of some sort of machine which is supposed to be free from that element of fallibility that is inherent in our mental processes. Some sort of instrument, or apparatus, is regarded rather like the photographic camera: "it cannot lie." Abrams' Box is one of the latest of these short cuts to diagnosis and treatment.

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The scope does not end here. Man is a rational being, and an emotional one. He has illnesses of the mind as well as of the body; indeed, it is a truism to say that we must treat his mind as well as his body, or, as it is frequently put, it is necessary to treat the patient as well as his disease. Sometimes it is his mind that requires the major consideration, moreover, the shadow of the petrous bone lies across the floor of the antrum and with the head thrown forward it lies across the top of the antrum; radiograms of the two positions give a clear picture of the top and bottom of the antrum separately. Finally, if there is any doubt of the diagnosis the antrum may be punctured and washed out; if the washing is clear the antrum is regarded as being normal.

Palliative treatment of an infected antrum includes rest in bed on high pillows and the inhalation of menthol steam, which shrinks the mucous membrane and allows the pus to drain away. The patient should inhale the vapour for five or ten minutes and then lie on the side opposite to that affected. This treatment will often clear up the infection completely. Lotions should not be used; they tend to drive infection to the ear and sinuses. Pain can be relieved by applying cocaine and adrenaline on a swab to the middle meatus. Aspirin can be given freely and Dover's powder if necessary. If there is no improvement after two or three days the antrum should be washed out, and if symptoms persist permanent drainage into the nose becomes necessary.

SPECIAL ARTICLES

MEDICINE AS A CAREER[1]

By Lord Horder, K.C.V.O., M.D., F.R.C.P.

When I received the Provost's kind invitation to come to Cardiff to address you on the occasion of the opening of the winter session of your school I had several inducements to accept it. To begin with I felt I was coming amongst friends, for indeed I am happy to count several of your teachers as personal friends, and two or three of them valued friends of long standing. Then in the second place I was external examiner in medicine at the University of Wales for two years, and have only just resigned that honourable post. In the third place I have been familiar with the history of your medical school and have watched its progress since the days when Sir William Osler, himself a great friend of your school, took an active part in advising those concerned about the foundation. I watched the pangs of its birth, the struggles of its early years, and I have noted with great satisfaction the rapid development it has made in more recent times. I have for these reasons become very sympathetic towards the efforts you have been making to take your place amongst the great teaching centres in medicine. I feel sure that you have arrived at last, despite many difficulties. And if I could do anything to help you to consolidate your position I was most willing to attempt it. No man can really be a judge of his own capacity to fulfil a desire of this kind; that must be left to the judgment of those who view him from without. So that the responsibility of my being here in the capacity in which I find myself this evening is, as you see, not mine but that of your Council and of Prof. Sheen, your provost. I can but affirm that I have a definite attachment for your school, and that I feel honoured, and am pleased, to be here.

MEDICAL EDUCATION IN WALES

I want to add one other thing, because I am glad to be able to record it. It was one of my duties, as external examiner, to judge of the standard of the examinations for the degrees of M.B. and M.D. at Cardiff. I reported that this standard was, in both cases, very satisfactory indeed. Previously, I was not certain. Being of a generous disposition, I assumed that it was. But now I know, and I know from my own observations. So that when I meet a graduate in medicine of the University of Wales, my attitude is one of entire respect. I ought to say here, perhaps, that I have had a good deal of practice in examining in London and outside it, so that my estimate is based upon plenty of comparative experience. Nor do I see any reason why this high standard should ever be lowered. Sooner or later the maintenance of a high standard is itself a great attraction to a school. It raises the level of general culture amongst the students who enter the school, and it keeps up the level of efficiency of the graduates. I know that these two considerations are always in the minds of your professors and their colleagues, and once the tradition is well established it is not likely ever to die.

Not only has the Welsh National School of Medicine become a recognised training centre of graduates well equipped for the practice of medicine; it has become a fruitful field for the training of teachers in medicine and in ancillary subjects. Cardiff has already sent teachers of distinction to other large centres, including London. This attainment is no less important than the establishment of a reputation for a high standard in its graduates. If I add to these assets certain others—such as your excellently designed and equipped laboratories, the wealth of clinical material, and the opportunity which you have of linking up the various hospitals so as to make this material available for teaching and for research, —this is, of course, the key position in your scheme—there seems to me to be here in Cardiff all that is required to make a great school of medicine. Of course one other thing is necessary, indeed, is vital: it is a thing vital to the success of every human activity, whether this be a school of medicine or any other institution: a whole-hearted spirit of coöperation to one end on the part of those concerned. The word is hackneyed, but there is no other equally appropriate: *esprit-de-corps*. And in the corps we must include not only students and teachers but lay administrators and municipal authorities. There are times when young institutions suffer from a lack of vision on the part of one or more of these essential constituents of its corporate whole. And it is no secret that the Welsh National School of Medicine has been bothered and handicapped in the past by discordant voices when the one thing necessary to the success of a dynamic policy was unison and harmony. A strange thing this in Wales of all places—dysharmonious singing! But let us not talk of the past. There is now a united front and a united spirit, and therefore, with all these advantages of which I have spoken, there is the certainty of a long and successful history for your school.

FIELDS OF WORK

I don't suppose anyone here this evening remembers that I opened a winter session of your school in Cardiff a good many years ago. I doubt if Prof. Sheen remembers this. The incident is dim even in my own memory. I believe I talked about the qualities that I thought went to the make-up of a good doctor. Put like that it sounds as though I were a little sententious, and I probably was. Anyway, as those I was addressing were presumably all committed to medicine as an occupation for the rest of their working lives it was clearly rather late in the day to consider whether they were fitted for this pursuit or not. And I don't suppose for a moment that anything I said induced a single student to give up a mistaken vocation before it was too late. I am not going to speak this evening about the material of which good doctors are made, but of the career which medicine offers to all healthy boys and girls, possessed of an average intelligence quotient, who want scope for the exercise of their personalities and whatever other gifts they possess. No doubt a good doctor, like a good poet, is born and not made. But it really is impossible to say in advance who will make a good doctor. Medicine holds out so many and such different possibilities that this consideration need not deter anyone from entering it who seems not to have received a "call" for it. There are probably some here this evening who get spasms of doubt as to whether they are cut out for the career of medicine. There may even be some whose doubts are more continuous, so much so that this exercises a depressing influence upon their work. I don't think they need worry. I think this feeling is natural to many people who are still in the noviciate stage, whatever it may be that they have undertaken; indeed—and this is the point I want to make—I believe this feeling is not uncommon in that very temperament which, later on, finds the practice of medicine to be extremely congenial, and whose work is therefore very satisfactory. If I yield for a moment to the temptation to be personal, I will confess to you that I have been conscious of this feeling of doubt about my own choice of a career at frequent periods ever since I began the study of medicine. I still sometimes wake in the night, in what is called—perhaps with more expressiveness than actual truth—"a cold sweat," and with a sense of panic lest I may have missed my vocation. And I have, even yet, never quite forgiven Fate for denying me, what at the time I thought so essential, the leisure and the opportunity of thinking out, fully and carefully, the pros and cons of the profession into which I was, as it were, inveigled. I remember how fearfully and tentatively I approached the final decision. I dallied first with biology, then with physiology, teaching both of these subjects before finally committing myself. Then, when the step was at last taken, I remember the qualms and the doubts that assailed me. Had I but realised the vastness of the sphere presented by medicine I might have spared myself all this mental agony and stepped off boldly, assured that somewhere in this large and ample country I should find a congenial spot for the exploitation of whatever gifts fortune had bestowed upon me. Since that time medicine has broadened out more and more, and to-day there is a positively staggering choice of activity for young men and women who enter its ranks. So you need have no fear. If you do not find a niche of some sort you are dull dogs indeed.

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[1] An opening address given to the Welsh National Medical School on Oct. 6th.

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Lastly, there is preventive medicine, perhaps the greatest of all the developments of modern medicine: further scope still for a full and satisfactory career. I will not stay to analyse the special requirements for taking up this branch of our science and art, but the attraction it holds out for some of you will undoubtedly make itself felt, and you will join the growing army of medical officers of health, upon whom the public relies to preserve it from disabilities and wastage of effort, before disease arrives, rather than to struggle with disease after it has developed.

In view of all this it seems clear that medicine is a very "liberal" profession; it offers a career that is almost too embarrassing in the choice which it offers to our diverse personalities. All the same, within a few years from now, the majority of you will be engaged in what is termed "general practice." That, as I have already said, is the natural outcome of your studies and also, I hope, of your inclinations. It is for efficient service as the personal medical adviser of the citizen that the curriculum is designed, and towards this all your present labours are directed. After all, a medical school is not for the training of specialists, it is for the making of doctors. Specialists will emerge, willy-nilly, in quite as large numbers, and quite as fast, as the public can absorb them to its advantage. And the specialist who has not received that thorough grounding in general medicine which goes to equip a good general practitioner is a danger, rather than a boon, to the community.

GENERAL PRACTICE

Now you must not think that when you enter general practice your career is a fixed and a limited thing. Quite the reverse. The position is still a very elastic one, and it will depend greatly upon your ambition, your energy, your knowledge of your fellow men, and, above all, your conception of the doctor's function and status in society, what sort of a career you will carve out for yourselves. I beg of you to hold the view constantly before you that in proportion as you regard your function as necessary to the happiness and health of the community, so will the community look to you for guidance and help. You will be set apart, both by science and by the traditions of your art, quite as much as the priest is set apart; the knowledge of this fact, and the behaviour which the knowledge induces, will add dignity to your work, and will earn that respect from your fellows which will be your desert.

Much has been written, and spoken, about how to succeed in general practice. But it all turns upon a man's idea of success. And this, again, is very largely a question of temperament. If by success is meant making money, then I do not agree with those who say that the choice of medicine is a great mistake. It is possible to make quite a lot of money by doctoring. It is possible to make quite a lot of money at any business, if a man only spends sixpence out of every shilling he earns. But this is not making a career of medicine; it is, as I have indicated, making a business of it, and this, to speak frankly, is not only possible, it is quite frequently done. And in these cases the investment, constituted by the outlay upon the six years' training to become a doctor, is not at all excessive. If, however, a man wishes to live by more than bread alone, if he wants other interests in life than to see his private fortune gradually mount higher and higher, then medicine gives him this opportunity also. He may play a little, or he may even play much, and work between whiles so as to make his play enjoyable. He can still, on this basis, live free from anxiety as regards his financial position. That is, providing always that his play does not take the form of gambling—i.e., speculating with his earnings. If he does this—and medical men show a terrible propensity for speculation—he will not be free from anxiety. On the contrary, he will be so full of anxiety that his work will lose its interest for him, and will become so perfunctory that it is almost worthless. The psychology of gambling amongst doctors is a subject of some interest; but I must not digress to analyse this weakness. I think it is perhaps allied to another weakness which is not uncommon amongst us, but on that also I must not stay to dwell. But neither in the case of the man who practises medicine (and when I use the word medicine I include surgery) to accumulate money, nor in the case of the man who practises medicine as a background for play, is medicine a *career*. Medicine is only a career for the man who sees in it an opportunity for accomplishing two things—self-culture and the progress of the science and art of healing through the contributions he can make by his individual efforts. That is to say, whereas he enters this field himself raw and uncultivated, and finds medicine arrived at just such and such a point of progress, he leaves it with himself self-disciplined and mentally mature and with medicine ever so little—it may be infinitesimally—advanced as the result of his influence. At first blush this may sound rather sentimental and somewhat high-falutin'. But it is really neither of these. In the first place we have all of us got to do something with life, and it becomes obvious, if we keep our eyes open, that we either grow up or we do not. The healthy thing is to grow up. The unhealthy thing is to remain infantile. A few of us, it is true, develop progeria (premature senility), but that is a comparatively rare disease. There is no other alternative. The poet says: "'Tis better being well than ill." In the more modern parlance it is better "fun" to grow up than to remain immature. Medicine gives us an excellent *milieu* for growing up in. Culture is mental growth. In the second place the pursuit of such an occupation as medicine is not really a sentimental matter, as we all realise, sooner or later. It means much spade work, application, concentration, the struggle with problems that teem with interest, the chase, hotfoot, till the quarry is at our feet. The fact that a fellow human being is the healthier and happier for our labours is an incident, and a very inspiring one, but it is not the cause of our efforts. True, after a time certain habits, which were at first tiresome, become, as all habits sooner or later do become, pleasant. After a while it is difficult to say where disciplined self-expression ends and public or social service begins. We are often credited with being members of a "noble" profession because of this obscurity. It is clearly not in the public interest to destroy this illusion. All the same it is the *milieu*, again, which determines this fortunate estimate, rather than any virtue which lies in ourselves. Whether we actually advance our art or our science a stage further depends upon whether the creative streak is in us or not; and this is a rare gift of the gods, jealously bestowed; but we can all interpret the steadily progressing mass of medical knowledge which is our heritage and our acquirement in terms of helpfulness to our patients, and so make our contribution to the happiness and to the welfare of our fellows. And, in the best sense of that phrase which otherwise sounds so selfish, "have a good time" in doing it.

The career of general practice itself enlarges and improves as the years go by. The existence of partnerships allows of some useful specialisation as between the various members of the firm, and this is especially so in the provinces. The doctor's work is raised to a higher level, and both he and the patient is the gainer. Decentralisation of hospitals affords another facility. The up-to-date cottage hospital, with paying wards and beds, improves efficiency all round. These things, which make an appeal to the intelligent public, tend to raise the status of the doctor, and to enhance his value in society.

NATIONAL HEALTH SERVICES

The question of a State medical service is one which has caused a large amount of discussion and considerable feeling. The fear that anything like the nationalisation of medicine may come to pass in this country, as least so far as the general practitioner is concerned, is, I think, unjustified. The citizen's right to choose his own doctor is deeply embedded in the public mind, and is likely to determine this issue for a very long time, if not permanently. All the same, the extension of the national health services which has taken place in recent years, and which is still proceeding, appears to be not only in the public interest, but in the interest of practitioners also. Any increase in organisation by which the doctor finds himself better equipped, and less subject to wastage of time and effort, is to be welcomed. The only inalienable factor, without which no good doctoring can really be accomplished, is that preservation of a direct contact of doctor and patient which experience proves to be essential to success. This is the crucial matter which has to be watched. The temperament of the medical man is a pertinent matter in connexion with his type of work. There are some who can only do their best work when the element of complete freedom of action is preserved throughout. There are others who are so constructed that their best efforts are seen when they occupy whole-time posts as part of a scheme for which they are not themselves responsible. Between these two extremes come others who are happiest and most efficient when they mix a certain amount of private work with attendance at clinics which are organised for them, and are run independently of them. Here again medicine, as at present practised in Great Britain, is able to provide an ample choice.

I think I have said enough to justify my contention that medicine is a career that is well worth following, and is one which offers tremendous opportunities to those who enter it. Having entered, however, there are certain obligations laid upon us. I want to touch upon these in closing this short address. A man may be pardoned for plagiarising himself, or at least he cannot be accused of theft if he does so. So I will borrow from myself in my concluding sentences :—

You will find medicine a jealous mistress, but you have chosen her, and if you serve her loyally she will return your devotion in full measure. This does not mean that you will lead small, ignoble lives. You will follow George Wyndham's dictum : "If we cannot makes our lives long, let us make them broad." Indeed, that is a part of your duty. You will need all the antennæ that you can develop so that you can touch people at many points. All this you can do and still be your self, made wise by fusion with life, so that you become an artist and not a mere technician. In your work, however, though you will be tempted to diffuse, you must concentrate. Politics, literature, art—each one will say to you, "Come out and try us," but you will decline. More subtle will be the temptation to stray into some by-way of medicine itself, something that promises the panacea that men crave for. You will resist this also. You will be chary of the short cut, the royal road, and the leap that science, no more than nature, never takes. Always you will keep an open mind. It will be well if you add to your daily prayer : "Save me from obsessions." You will remember that, just as in life nothing can bring men peace, so in medicine nothing can bring them health, but the triumph of principles. This thought reminds me of Sydenham, the father of English medicine, and I cannot more fitly end these remarks than with a quotation from him. He is concluding his "Epistolary Dissertation," and he says, "And now, worthy Sir, I desire you to accept this small treatise favourably which was designedly written to return you thanks for your approbation of my other works. And indeed, I have so seldom received anything like approbation, that either I have merited no such thing, or else the candid and generous men whom nature has framed with such excellency of mind as to know how to be grateful, are very few, ..., yet, notwithstanding, I endeavour all I can and will do so, to learn and promote the method of curing diseases, and to instruct those who are less conversant in practice than myself, if any such there be. Let other people think of me what they please. For having nicely weighed whether it is better to be beneficent to men or be praised by them, I find the first preponderates and most conduces to peace of mind. As for fame and popular applause, they are lighter than a feather or a bubble, and more vain than the shadow of a dream."

MEDICINE AND THE LAW

Coroner and Witness's Name

At a Croydon inquest last week the identity of a young woman who gave evidence was not disclosed. The deceased had been killed by a motor-car near his home. The witness said that earlier in the day on which he died she had arranged to dine with him but, finding that he had been drinking, she declined to carry out the arrangement. At the close of her evidence a man asked the coroner why the witness's name had been suppressed. He claimed that it was a public court and that, as a member of the public, he was entitled to an explanation. Dr. Beecher Jackson, the coroner, rightly refused to have his discretion questioned. He answered that no public explanation would be given ; there was, he added, a perfectly good reason why the name should be suppressed.

It is unnecessary to emphasise the wide power of the coroner to ensure privacy in proper cases. As is said in "Jervis on Coroners," it is a power necessary for the due administration of justice, and it is impossible that the proceedings should be conducted with due order and solemnity, and with the effect that justice demands if the presiding officer has not control of the proceedings. The practice of withholding a witness's name is at present being freely used by High Court judges at assizes in the effort to stamp out the odious crime of blackmail. This is done either by directing that the name of the prosecutor shall not be mentioned in court or by asking the representatives of the press to see that the name does not appear in reports of the case. If some member of the public stood up in court and asserted an abstract right to know the name of the prosecutor in blackmail proceedings, the judge would speedily disillusion him.

The Dustman and the Gas Cylinders

An unusual claim against a medical practitioner for damages for negligence (Pattendon *v.* Beney) was dismissed with costs before Mr. Justice Horridge on Oct. 6th. Two dustmen at Bromley, calling from house to house to collect refuse, were asked by a doctor's wife to take away four metal cylinders. The dustmen did not know what the cylinders contained; they put them in a pail at the back of the dust-cart and drove on to the next house. One of the men, subsequently collecting at another house, heard a loud explosion. Going back to the road he found his mate sitting by the roadside evidently in great pain. One of the cylinders lay in the road with its cap off. The injured man died next day in hospital, his injuries being apparently due to a severe blow in the stomach. The widow claimed damages for herself and her children. Her counsel argued that the cylinders were dangerous explosives. On behalf of the defendant doctor it was said that these were old cylinders; the doctor had examined them previously and had come to the conclusion that there was nothing in them; neither the doctor nor his wife had any knowledge that there was even any potential danger in the cylinders. Great force, it was said, was necessary to remove the cylinder cap. To avoid the expense of a re-trial it is usual nowadays to put a series of complicated questions to the jury. To the questions put to them in Pattendon *v.* Beney the jurors answered as follows: (1) there was not sufficient evidence to prove that the death was due to the explosion of the cylinder, but, in their opinion, the cause of death was the handling of the cylinder; (2) assuming that the cylinder was dangerous in the condition in which it was given to the dustman, the defendant doctor did not know, but ought to have known, that it was dangerous; (3) the deceased was not guilty of contributory negligence. The jury went on to award £600 damages, but after legal argument as to the effect of the findings the judge declared that the action failed.

The case against the doctor was that (*a*) the cylinder was dangerous because it might explode, and (*b*) it did explode and the explosion caused the death. The jury, Mr. Justice Horridge said, found that there was not sufficient evidence that the explosion caused the death. The judge observed that the cylinders were constructed to withstand great pressure from the inside; they could have had very little gas in them; in the judge's opinion there was no danger in giving them to the dustman. The judge naturally had to consider the effect of the jury's findings that the doctor ought to have known (but did not know) that the cylinder was dangerous. Here he referred to one of his own previous decisions, Bates *v.* Batey and Co., delivered in 1913. A boy had lost an eye through the bursting of a ginger-beer bottle in the process of opening the bottle. There was a defect in the bottle of which the ginger-beer manufacturers did not know, but which they might have discovered with reasonable care. On that occasion the judge held that the manufacturers were, in the circumstances, not liable, and incidentally that a ginger-beer bottle is not in itself a dangerous thing. Last year the House of Lords dealt with another ginger-beer bottle case (M'Alister *v.* Stevenson) where the presence of a snail in the bottle was alleged to have caused illness. Mr. Justice Horridge observed that Bates's case had been mentioned during the arguments in M'Alister's case but had not been overruled; he therefore proposed to follow Bates's case in dealing with the gas cylinder, and to hold that the doctor was not liable if he did not know (though he ought to have known) that the cylinder was dangerous.

The ginger-beer bottle cases involved peculiar legal questions of privity of contract as between the original manufacturers and the ultimate consumer, as the latter did not buy the bottle directly from the former. These questions do not arise where a dustman is given a gas cylinder by a householder. In Bates's case the judge reviewed several other decisions about things alleged to contain inherent danger. There was one about a defective lamp (where the defendants had no reason to suspect latent defect, but had they been expert technical engineers might have realised the danger), another about a defective gun, and a third about a vicious horse where Mr. Justice Lush had seemed to favour the view that if the seller of the animal ought to have known of its vice his actual ignorance thereof was immaterial. In the cylinder case, if it is the province of the judge to rule whether or not the thing is dangerous, Mr. Justice Horridge seems to have settled the matter finally. More, however, may yet be heard of it, for a stay of execution was granted with a view to appeal.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE GRANCHER SYSTEM IN 1932

Recent statistics of the application of the Grancher system of isolating children from tuberculous families were presented to the Academy of Medicine recently by Dr. Armand-Delille. During 1932 alone as many as 6044 children were placed in healthy homes. The Grancher system has for some time been linked up with Calmette's system of B C G inoculation, and the child found to give a negative skin reaction to tuberculin is inoculated with B C G. A negative Pirquet reaction is not a necessary qualification for transfer of a child living in tuberculous surroundings to a healthy home in the country. A skiagram of the lungs however is required and any changes visible in the lungs or glands disqualify a child for treatment under the Grancher system. The clinical examination also must be negative. The results obtained by the Paris branch of the Grancher system between 1907 and 1931 are held to be encouraging. During this period only 12 out of 4000 Grancher children developed tuberculosis—a morbidity of 0·3 per cent., as compared with a morbidity of more than 60 per cent. among the children remaining in tuberculous surroundings. Similar striking differences were observed in the tuberculosis mortality—1 per cent. instead of 40 per cent. The general mortality, including that from gastro-enteritis and broncho-pneumonia, was 6 per cent.—a ratio which corresponds approximately to that observed among other children placed out with foster parents. The Grancher system with its various branches is mainly financed from private sources; of the more than seven million francs contributed in 1932 only one and a half million were provided by the State.

"LES AVORTÉES"

A book just published by a medical author, Dr. Gonzalve-Menusier, has caused some stir, since its object is not only to thrill but to educate. Whether the public likes its fare to be so mixed is not yet clear. The hero is a Dr. Maillard, in general practice. He is consulted by one woman after another, all coming to him with the request to procure abortion. There is the young girl who, under the influence of dope, has become pregnant; there is the girl who has been promised marriage and then denied it. Dr. Maillard turns a deaf ear to all these requests, but encounters the cases later in hospital or the post-mortem room, someone else having been more complacent than himself. There are scenes in a court of justice where the author displays his sense of the dramatic while betraying his ignorance of French medical jurisprudence. The latter does not really matter much, for the book makes no claim to be educational in a legal sense. It certainly draws attention to a problem which is disturbing medico-legal authorities in many civilised countries at present—whether the morbidity and mortality due to surreptitious attempts at procuring abortion do not justify alteration in the law.

A FRENCH MEDICAL CONGRESS ON WINE

On Sept. 7th "Les Médecins Amis du Vin de France" held their first national congress at Bordeaux. Among the objects of this congress was the scientific study of the action of wine on the human body in health and disease, and more than 200 French and foreign doctors attended. Prof. Baglioni, of Rome, contributed a paper in defence of wine. Its physiological properties were discussed by Dr. R. Fabre, and the influence of wine on the appetite by Dr. Malachowsky.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

SURVIVAL OF THE VOLUNTARY HOSPITALS

IN an address lately given at Dundee, Dr. R. W. Craig, Scottish medical secretary of the British Medical Association, pointed out that the financial state of the voluntary hospitals is becoming somewhat precarious. Local authorities have the power, except in cases of infectious disease, to charge patients for maintenance and treatment. Voluntary hospitals in general have no such power—some because of their charters and some because of peculiar limitations to the necessitous poor. But since the future of the voluntary hospitals must be assured, the people treated in them—other than the destitute—must be asked, either directly or through some organised insurance scheme, to pay charges appropriate to their incomes. At the same time hospitals could no longer be left to the uncertain operation of charity, and Dr. Craig advised a scheme of coördination between all institutions, whether voluntary or municipal, in the same area. If, for example, in an industrial area, a voluntary hospital had been established to deal principally with accidents and other surgical conditions, the other hospitals in the area, whether voluntary or statutory, should make special provision for dealing with medical cases. He referred to the Aberdeen system, which ran on these lines. With regard to out-patient departments, many patients were treated there who could quite properly be referred to their own doctor; conversely, more facilities should, he thought, be given to the general practitioners for treatment of their patients in hospital. There was also, he said, a growing feeling that the staffs in the voluntary hospitals should receive some financial recognition for their work.

Dr. Craig's address was given before the Scottish Council of the Women Citizens' Associations, and in the discussion which followed Lady (Leslie) Mackenzie said that one general principle to get into everyone's mind was that the hospital should become the sick-room of the ordinary man's house. Houses to-day were not built for being ill in. If arrangements were a little better it would not be necessary for nurses to become wardmaids for their first year or two of training. That necessity arose because the voluntary hospitals could not pay for cleaning. In Russia, she understood, things had gone to another extreme and they were making medical students learn to scrub simply as a disciplinary part of their curriculum.

THE CAMERON LECTURE

This year the University of Edinburgh was fortunate in securing Prof. George F. Dick, of Chicago, and his wife, Dr. Gladys H. Dick, for the Cameron lecture. The anatomy theatre was filled to overflowing. After Sir Thomas Holland, principal of the University, had introduced the lecturer and had recalled that previous Cameron prizemen included Pasteur, Lister, Ross, and Madame Curie, Prof. Dick described the series of experiments that led to the preparation of scarlet toxin and antitoxin, and the prophylaxis and treatment of scarlet fever. It ought to be possible, he said, by the use of his methods to bring an epidemic of scarlet fever under control within 48 hours, even if it still is impossible to state exactly the proportion of persons naturally immune.

THE LATE DR. W. M. SELBY

I regret to note the death of Dr. William McDowall Selby, J.P., of Portwilliam, Wigtownshire. He was born in 1873, and as a young graduate was considered likely to attain to a distinguished place in the Edinburgh profession. But he elected to succeed his father, who was well known as a practitioner in Wigtownshire for over 40 years. One interesting fact I learnt from him—namely, that he had attended a case of leprosy for some 30 years. There are not many known cases of leprosy in Scotland now.

The younger Selby inherited his father's personal charm and made his mark in the county, retiring after 35 years of professional work. His two sons are also medical.

SALARIES OF HOSPITAL OFFICERS

For reasons difficult either to explain or to justify, medical salaries in Scotland are usually below the corresponding salaries in England. Dr. W. T. Benson, medical superintendent of the Edinburgh City Hospital, has been saying that he sometimes finds difficulty in getting resident doctors. Owing to alterations in the D.P.H. regulations, men working for the diploma can no longer undertake this work, and there are so few applications that there is no longer any question of selection; the hospital authorities have to take the first man who comes along. The problem, he said, is largely one of salaries. Whereas in Edinburgh the total salaries bill of assistants in the City Hospital is £700 a year, the bill in hospitals of similar size in other parts of the country ranges from £1700 to £3000.

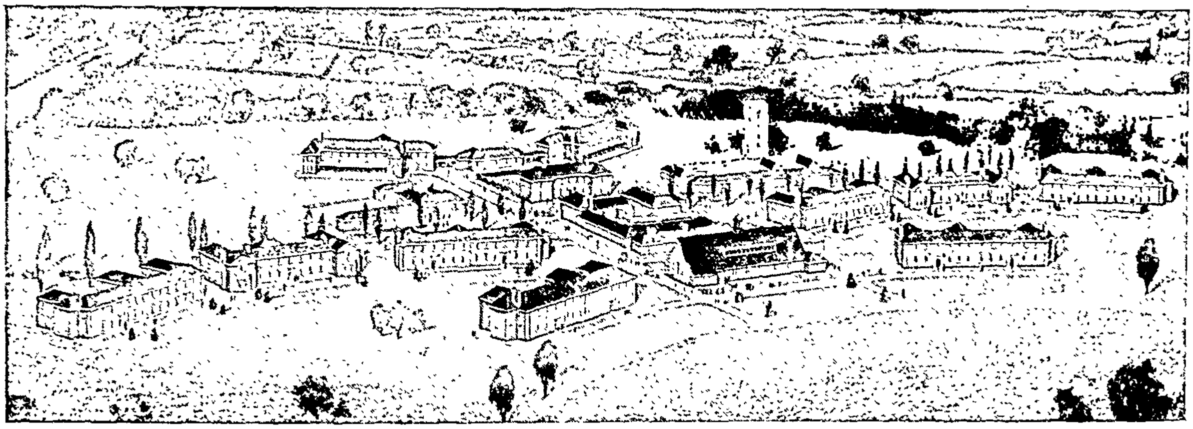
THE BED-BUG

The Department of Health for Scotland have done well to publish the research paper by Dr. William C.

Gunn, senior assistant medical officer of health for Glasgow, on the habits and character of the bed-bug. This document should be of the greatest service to medical officers in enabling them to track the breeding-places. The main problem for the moment is to prevent the bugs invading the new houses in Glasgow and elsewhere, where they are one of the most loathsome features of the slums. In Edinburgh, Dr. Guy has received many complaints about the infestation of new houses by bugs, and special measures of disinfestation are being elaborated. It is proposed to introduce the Manchester scheme of disinfestation.

THE CELL BARNES COLONY

THE Cell Barnes Colony, a certified institution for the care and treatment of the mentally defective, designed to accommodate 600 persons, was opened on Oct. 5th by the Minister of Health. At present 400 defectives are to be taken from Hertfordshire and 200 from Middlesex. The Colony is situated near St. Albans, Hertfordshire.



The first members of the staff arrived early this year, and the first patients in March. Already 123 male and 117 female patients are in residence. The Colony consists of ten blocks, five for each sex, which are built in semi-circles, according to the design of Mr. J. M. Sheppard, F.R.I.B.A. The administrative and hospital blocks, kitchens, and laundry divide the two parts.

Each house can take 60 patients, and is built in a plain but pleasing Georgian style on two floors. Externally the houses are more or less the same; internally they differ in details of decoration and arrangement of some of the rooms. Each house is self-contained, with a large airy day ward on each floor and a dormitory leading off it. Adequate baths and washing facilities are provided, and a small kitchen deals with the china washing up and light meals. The main meals are brought over from the central kitchen on hot trolleys. Each house has a good-sized garden area on the south side, at present surrounded by wire fencing; it is hoped that shrubs and other plants will soon be planted round each enclosure (at present it has a Whipsnade appearance). The patients are graded as far as possible by their mental age. The children's block is particularly attractive and cheerful, with coloured pictures and bright curtains. As yet there are not many children, but those seen were obviously happy and well cared for.

The women patients were washing cotton dresses, mostly of a varied flowered design, made on a simple but not uniform pattern. The dresses have all been made in the Colony by the women and girls. A contrast in dress was provided by a few proud members of the Colony's girl guides, who were conducting visitors from one block to another. The patients are kept under supervision for some weeks on arrival, and are then graded to suitable blocks. The high-grade girls help in the laundry and sewing room, and also with domestic work in the nurses' home. The men and boys work in the gardens, carpenter's shop, and kitchens. There is one house on each side for the more responsible patients who have parole of the Colony, and some may be trained to earn their livings outside the Colony, being kept under supervision and recalled if unsuccessful.

The hospital has four wards, two for each sex, with a good operating theatre and laboratory. This block will be staffed by female nurses, and is in charge of a doubly qualified sister. The kitchens are large and up to date. The cooking staff is assisted by male patients who help in the kitchen and take the hot trolleys round to the various blocks at meal-times. In the laundry a man is in charge of the washing machines, but a small staff of four, with the assistance of girl patients, are responsible for all the hand-washing and ironing. Modern electric irons and a roller machine for sheets are in use. A workroom deals with the mending and dressmaking for nurses and patients; the tailoring is done by the men.

The recreation hall, fitted with a stage, will accommodate the whole Colony, and is an example of the cheerful atmosphere of the Colony. An old house on the edge of the estate has been converted into a nurses' home, and a long wing has been added. Each nurse has a small electric fire in her room, and the common rooms and writing-room are cheerful and comfortably furnished.

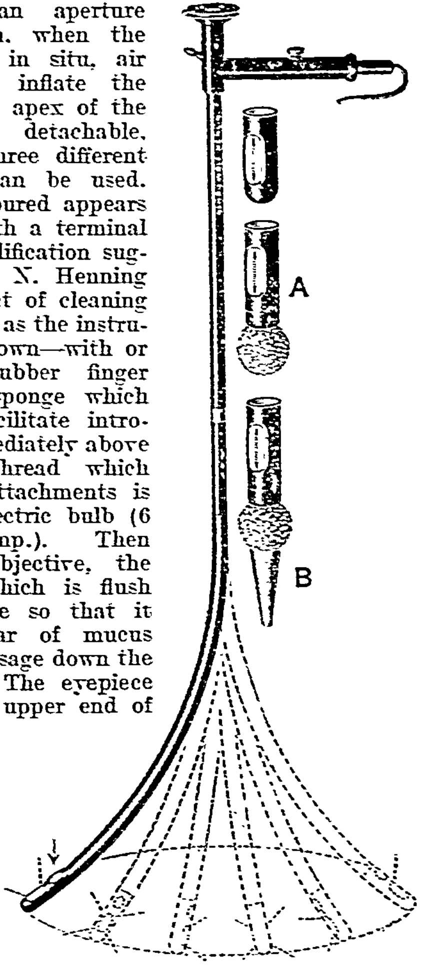
The total area of the Colony, which is under the medical direction of Dr. Noel Burke, is 95 acres. The grounds are now being prepared for recreation and market gardening.

The architects are Messrs. J. M. Sheppard and Partners, 38, Bedford-place, London, W.C.1.

NOTTINGHAM GENERAL HOSPITAL.—Lady Galway recently opened two new wards which have been added to The Cedars, Sherwood, as an enlargement of Nottingham General Hospital. The 40 beds thus added bring up the accommodation to 110 beds. For many years The Cedars, originally a private house, was used as a convalescent home for the hospital.

THE NEW GASTROSCOPE

OUR comments last week on the flexible gastroscope devised by Prof. R. Schindler and Mr. J. Wolff have aroused interest in the details of construction and use of the instrument. Its total length is 68 cm., the length of the flexible part, which contains a row of biconvex lenses in contact, being 38 cm., and the diameter 11 mm. It consists of a flexible elastic part, furnished with two black rubber covers, the outer cover being provided with an aperture through which, when the instrument is in situ, air is passed to inflate the stomach. The apex of the gastroscope is detachable, and one of three different attachments can be used. The most favoured appears to be that with a terminal sponge—a modification suggested by Dr. N. Henning with the object of cleaning the œsophagus as the instrument passes down—with or without a rubber finger beyond the sponge which is said to facilitate introduction. Immediately above the screw thread which secures the attachments is a powerful electric bulb (6 volts, 0·4 amp.). Then comes the objective, the window of which is flush with the tube so that it is wiped clear of mucus during the passage down the œsophagus. The eyepiece is set at the upper end of the rigid part, and the length of the instrument is calculated so that when a white mark on this part passes the teeth of the patient the objective will have reached the stomach. All parts of the gastroscope with which patient or operator come into contact are insulated.



Showing that the gastroscope can be turned on its axis in any position, like a rubber tube. The angle of vision is 60°. A, terminal attachment with sponge; B, with rubber finger beyond sponge. Arrow points to objective.

DIRECTIONS FOR USE

Dr. Schindler gives detailed directions for the use of the instrument. Half an hour before the examination he recommends the injection of half an ampoule of Dicodid, together with ½ mg. atropine sulphate. Plenty of time must be allowed for anæsthetising the throat, and the anæsthesia should be complete, so that the patient does not "notice any serious pain." It is effected by a systematic painting of the base of the tongue, the soft palate, the tonsils and uvula, and the posterior wall of the pharynx with 2 per cent. pantocaine, to which a few drops of suprarenin 1 in 1000 has been added. Only when the posterior wall of the pharynx is insensitive does the operator proceed to anæsthetise the upper end of the œsophagus through the constrictor of the pharynx, which sphincter must be made to relax. When anæsthesia is established, a stomach-tube is first inserted and withdrawn, and any fluid present in the stomach evacuated by lowering the head of the patient.

The patient is placed on his left side and told to breathe quietly, and to let his head rest lightly in the hand of the assistant, who bends it back slightly. The lubricated rubber attachment is then slipped over the base of the tongue into the hypopharynx. The operator holds the instrument with his right hand as close as possible to the flexible end; the left first finger is placed in the mouth of the patient to prevent the point of the gastroscope from going into the left lower sinus pyriformis, by pressing it, if possible, on to the backbone. During this part of the process the rigid part must be held by a second assistant. After it passes the constrictor pharyngis the instrument is quickly pushed forward, while the assistant who holds the head lowers it a little more. All these movements must be carried out without force. The instrument must slip easily. When the white mark on the rigid part has passed the teeth of the patient, the objective has reached the stomach, but the gastroscope must be passed as far as possible. As the instrument bends along the back wall of the stomach sensitive patients notice an uncomfortable pressure. When the instrument will not go further the lamp is switched on, and the stomach is inflated with air by pressure on a net-covered ball. During this the small nob on the eyepiece is to be directed towards the abdominal wall of the patient—i.e., to the left side of the examiner. The slow inflation is continued until a view of the stomach wall is obtained. Then the head of the patient is turned to the left, and the antrum and pylorus looked for. After a thorough examination of all parts of the stomach the gastroscope is quickly removed and cleaned at once under the water tap, and rubbed with alcohol to sterilise it. The patient is informed that through the anæsthesia the throat will remain uncomfortable for two or three days. Whether and how long the patient must rest after the examination depends entirely on his sensitivity to dicodid, pantocaine, and suprarenin.

All parts of the instrument can be replaced; the rubber covering is said to last a long time with normal use. Directions for changing it are supplied with the new cover on demand. Contra-indications to the use of the gastroscope are aneurysms of the aorta and stenoses of the œsophagus and the cardia. It is better to abstain from gastroscopy if the presence of varices of the œsophagus or cirrhosis of the liver is suspected, and in cases of dyspnœa and cardiac conditions. Dr. Schindler, while pointing out the great advantages of the instrument, to which we have already drawn attention, emphasises[1] the fact that the method of using it must be carefully learnt and taught, and that the interpretation of the pictures seen is extremely difficult. The use of this instrument by experts is, however, expected eventually to facilitate diagnosis to a remarkable degree. The English agents for the instrument are the Genito-Urinary Manufacturing Co., and its price to-day is 950 Reichsmark in Berlin, or plus 50 per cent duty, £110 in London.

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[1] Münch. med. Woch., 1932, lxxix., 1268.

PANEL AND CONTRACT PRACTICE

A Discussion on Insurance Problems

A CONFERENCE between representatives of approved societies and representatives of the medical profession was convened by the London insurance committee and held at the County Hall on Oct. 5th. There were 16 representatives of approved societies who were members of the insurance committee and four others. The London panel committee sent 20 of its members, many of whom had never before met any of the members of the insurance committee. The chairman of the insurance committee said he was sure everyone had come to try to help on the administration of the Act, to try to see the other man's difficulties, and to do what he could to help to avoid them. Sir Thomas Neil also spoke in the same sense.

MARRIED WOMEN AND PREGNANCY

The first subject of discussion was certification of pregnancy and other problems involved in the medical certification of married women. The approved society representative said that many women come up for a certificate because they think they should not have to work during pregnancy; others because employers refuse to employ them when pregnant; others, again, because their appearance is abnormal. He asked doctors not only to resist certification on these grounds but also to stick to the legal criterion of whether the woman is incapable or not within the meaning of the Act. The patient's occupation was of course important; many of them could not do their usual work but could do their housework. Could that be considered as a temporary alternative occupation? It would help societies if some period of gestation, or the date of expected confinement, could be put on the certificate, with a statement whether there was any associated abnormality, such as varicose veins. Societies were not anxious to refer such cases to regional medical officers, for references pleased nobody.

The answer from the medical side was that the certification of pregnancy was causing more difficulty than anything else; no two societies treated their cases alike; some referred every case, some always allowed a month's sick pay without hesitation. There were cases in which pressure was put on the doctor to grant a certificate by agents of societies as well as by relatives or friends. Nobody—doctor, patient, or society—really knew where they stood.

A suggestion was made that there might be a pregnancy benefit for every pregnant insured person dating from a specified time, such as four or eight weeks before confinement; or alternatively there might be an increase in maternity benefit; but no pregnant woman should then be entitled to sickness benefit for pregnancy, or for any complication arising out of it. It was also pointed out that doctors differ about the desirability of rest. That part of the Ministry which dealt with sickness benefits for married women issued pamphlets on capacity to work when pregnant which were very differently worded from those issued by the part of the Ministry which dealt with infant welfare. The latter strongly advocated rest, and sick visitors were sent to insist on it if possible. There were professional difficulties about putting the period of gestation on a certificate form, not excluding the possibility of resultant proceedings before the medical service subcommittee.

There was not so much discussion of the certification of married women in general, but in reply to one suggestion that married women should not be insurable at all it was pointed out that one of the principles of the Act was that *any* wage-earner should receive recompense if he or she became incapable of work through illness. Another proposal was that doctors should be asked to certify whether a woman was fit to do housework. This is frequently done by regional medical officers but never by the insurance practitioner.

CERTIFICATES ON A PARTICULAR DAY

The next discussion was introduced by the medical side, on the demand for certificates on a particular day of the week. The speakers said they realised that in some areas the agent had many miles to travel, and it was convenient for him to get the new certificate on the day he paid out sick pay. But was the system of book-keeping so inelastic that these agents must pay up to the full week? The demand was impracticable from the doctor's point of view; it led to waste of time and even of medicine, for the patients often asked for a new bottle when they came for a certificate, and wasted the remains of the old bottle in order to get a refill. The reply for the societies was that each day was very important financially, and yet about 40 per cent. of people "declared off" on Saturday. The pay day at the end of the week originated with the old friendly societies, to enable their members to get money for their Sunday dinner. Agents were dealt with firmly if evidence in writing could be obtained showing that they had demanded certificates on a particular day. It was thought more use might be made of that part of the certificate which says, "You should come to see me again on . . . ."

NATURE OF INCAPACITY

From the next discussion it appeared that what the societies want is an indication, as early as possible, of what is the matter with the patient—chiefly, it seemed, so that compensation might be obtained where it is due. Incomplete information puts the lay official in a difficult position, and practitioners were asked not to rely too much on a patient's statement as to the cause of his illness. One case was certified as gas poisoning on the patient's statement, yet on investigation it was found he did not work in or near gas. The other instances given were not happy from the societies' point of view, for the certificates contained quite clear medical indications of the sequence of events. The societies' representatives pointed out that venereal disease is known to occur among a number of workers, but is hardly ever mentioned on a certificate. The medical reply to these criticisms were, first, that alteration of diagnosis on certification led the society to think the doctor was doubtful; hence the original diagnosis was often persisted in. Secondly, doctors were not detectives and often had to accept a patient's statement, e.g., as to where he was working. Thirdly, most patients with venereal disease got free treatment from a clinic or else went to another doctor; moreover these diseases were not as a rule incapacitating. Both sides agreed that very little use was now made of the special certificate form Med. 40 D which enables a practitioner to state less precisely on the certificate the cause of incapacity. This, of course, goes to the local agent, but when it is used the doctor has also to write to the regional medical officer giving the facts of the case. Both sides, again, attacked the Ministry about its suggestion in a memorandum that cases of catarrh, gastritis, menorrhagia, and other disorders should be referred as soon as possible to the regional medical officer; but it was subsequently pointed out by a representative of the Ministry that this procedure was advised only if the report of the sick visitor was unsatisfactory.

CONTROL OF SICKNESS BENEFIT

In the last discussion the opening statement of the societies' representative showed the extent of the control of sickness benefit in an ordinary case. The doctor's certificate practically amounts to a cheque on the funds unless the member's record is bad or unless something suspicious happens—in which case the patient is sent to the regional medical officer. Claims are still excessive, and the coöperation of the profession was asked to find ways and means to stop the loss. Another speaker pointed out that 613 doctors in London, out of 1983 principal doctors under agreement with the committee, have less than 250 patients each on their list. These men were not likely to have much knowledge of, or interest in, the Act, for the bulk of their practice was not connected with it, and consequently they might inadvertently contribute to excess claims. Another approved society member had investigated claims among 10,000 of compulsorily insured persons in 1932. There had been 1816 claims—i.e., just over 18 per cent.—and if repeat claims were included the proportion was 21 per cent. In the old days people were aghast at 9 per cent. claims. Comparing the compulsorily insured with the voluntarily insured in the same society there were 9 per cent. more claims by the former. It was thought that the voluntary member has a greater sense of responsibility and therefore less pestering incapacity, though he is not less subject to illness than the State member.

Another society member thought it would help if certificates showed whether they were given at home or at the surgery; he thought there was an increase in short claims. Why were different form of words used by the regional medical officer and the insurance practitioner? The former says "not" incapable of work, the latter says "fit to resume"; they hardly meant the same thing. The time might arrive when, as in Germany, the patients had to pay for their first attendance or for medicine.

In the course of medical replies it was pointed out that certification had a bad start under old club system, where, however, members looked better after each other and did not feel that there were unlimited funds to draw on. Certification was much better than it was.

THE POSSIBILITY OF ACTION

Having dealt with only four out of ten items on the agenda, the meeting adjourned after a short speech by Dr. William Duncan, a divisional medical officer of the Ministry of Health. The English system, he said, was very good when the rules were followed, and it had been largely copied in other countries. Both sides had said they would like to deal with each other directly: how different it had been in 1912 when the profession would have nothing to do with societies at all!

It will be observed that many interesting and at times new suggestions were talked over in a friendly way. The question arises as to how results can be obtained. A conference has no locus standi, and must therefore set up some body or refer the points to some committee that can take action. The main negotiating committee for the medical side of controversial questions is the Insurance Acts Committee. The approved societies have more than one negotiating body, but probably the National Association of Insurance Committees would be their strongest and their most representative body. It is probable that this conference will refer all matters for discussion first of all back to their own respective committees—the panel and the insurance committees for London. These have a joint consultative committee, and if an agreed proposition could be obtained it would then go to the Insurance Acts Committee and the National Association for their approval with a view to incorporation in regulation, if approved *also* by the Ministry.

The Unemployed

At a meeting last week the Middlesex insurance committee decided to oppose any proposal for retaining under the National Health Insurance scheme those who have fallen into arrears by reason of unemployment. It was argued that the unemployed had been secured in their right to medical benefit without payment of contributions for at least three and a half years, and that this concession was a departure from the principles of the Act. If it were persisted in it would inevitably lead to reduction of benefits to those who did pay their contributions. The alternative was a special subvention to the National Health Insurance Fund, for which, the committee held, there was no justification. No hardship, it was suggested, would be inflicted on those affected if they had to seek medical benefit through the public assistance committees, inasmuch as many more had to look to the same source for such help. The number concerned, estimated at 80,000, did not justify a departure from the vital principle that benefits depended on the payment of contributions. One speaker, however, urged that medical benefit should be continued to the unemployed so that when the depression lifted—perhaps in two years' time—more of them would be physically fit to take up employment.

The Future of Health Insurance

The possible extension of benefit to the dependants of insured persons was the topic which aroused most interest at the twenty-first annual conference of the Scottish Association of Insurance Committees, held at Aberdeen on Sept. 29th and 30th. Mr. A. Clark, in his presidential address, said that in certain quarters there was a growing feeling that the ultimate solution would be found in what was called an "all-in" insurance scheme, embracing the whole range of social insurance. The subject was vast and complicated, but a survey of the international position led to the conclusion that although social insurance was now almost universally recognised it was far from having attained its maximum force. Curiously enough, however, even during the period of persistent unemployment the number of insured persons in Scotland had been steadily increasing. The past eight years showed an increase of 240,000, and the total number now entitled to medical benefit was 1,904,000, which was equal to 40 per cent. of the whole population. In any extension to dependants the receiver of the benefit ought to pay for it; the employer already bore a sufficient share of the burden by contributing towards payment of the workman's premium. The probable number of dependants was at least equal to the number of the insured, and assuming that the insured persons and their dependants account for 80 per cent. of the total population, the benefits of the panel system ought to be extended yet further so as to include, first, the legal poor, including the destitute able-bodied unemployed, estimated at 5 per cent. of the population, and, secondly, that large class of shopkeepers, artisans, and others who are at present without the benefit of insurance, although their economic position may be no better than that of the insured.

Whether this new benefit should be on a compulsory or on a voluntary basis is a matter for argument, said Mr. Clark. It was agreed, however, that the general practitioner scheme must be extended so as to provide hospital treatment and specialist services. The demand had become clamant, and was only partially met by the voluntary hospitals and the various contributory schemes now in existence. Under a complete coördination scheme the services of panel doctors could be utilised to a far greater extent than at present in discharging various duties under the Public Health Acts such as those connected with nursing, tuberculosis, child welfare, and school inspection, much of which is now done by specially appointed officials. The family doctor would thus become an important worker in general public health.

CORRESPONDENCE

LETTERS BETWEEN CONSULTANT AND PRACTITIONER

To the Editor of THE LANCET

SIR,—I do not know Mr. C. Robinson, the rhinologist to the Loamshire Hospital, but I think it is rough luck on him that you should pillory his bad report on a case by publishing it (Oct. 7th, p. 837), especially when it is clearly stated to be confidential.

I wonder whether it is a coincidence or by intention that out of the thousands that must now be available you choose a letter in reply between family doctor and consultant which illustrates one of the disadvantages of this form. It is possible that the nose rivals even the abdomen to-day as an area of the body on which unnecessary operations are performed, and the greatest cause of this is that they are advised without due consideration. It is very rarely that we should plump for operation on the nose at a single examination, or without seeing first how much relief can be obtained by some applicational or general treatment. The conditions under which we work in London at rhinology and otology tend to compel us in that direction. We cannot have the patient up daily or several times a week for some treatment that cannot be applied by the family doctor or by the patient himself, but needs the attention of a junior assistant or specially trained nurse working under the supervision of, or instruction from, the chief of the clinic. This class of work is best seen in a small centre such as Munich, and is very difficult to follow out in London, with the result that we all tend to advise operation against our better judgment at the first examination of the patient, instead of seeing him once or twice more first. This is particularly liable to happen in cases of suspected sinus disease sent up by a doctor, because in a busy clinic it is so hard to remember to send him the second note when the investigation is concluded; and then the patient drifts into that group of cases coming up weekly or fortnightly, having the medicine and treatment changed, and being converted into the chronic invalid. These cases are just as worrying to the head of the clinic for their presence as they are annoying to the family doctor for their absence.

Mr. Robinson is evidently young. Otherwise he would have known that he should have given Dr. Smith the opportunity of disagreeing with the operation before making arrangements for the patient's admission. It would have been better had he added the words "subject to your approval." Two things, however, show him to be a good fellow and therefore worth the trouble of this letter. He makes his decision as a result of anterior rhinoscopy, and not by a guess after transillumination and radiography, and he crosses out the Sir/Madam of the form and puts in Dr. Smith's name. The personal touch between practitioner and consultant is of value to the patient, and tends to be lost by the use of these forms instead of the old-fashioned notes. May I suggest that when they are reprinted a row of dots replace the Sir on one side and the Sir/Madam on the other. Incidentally, why not Sir/Madam on both. Are we to assume that the panel committee for London does not require the woman consultant?

I am, Sir, yours faithfully,

London, W., Oct. 7th, 1933. T. B. LAYTON.

TUBERCULOSIS OF THE LARYNX

To the Editor of THE LANCET

SIR,—On reading in your issue of Sept. 23rd the report of the discussion at the B.M.A. meeting in Dublin on Tuberculosis of the Larynx, I find myself in entire agreement with the remarks of Dr. F. R. G. Heaf, but must differ from the statement attributed to Mr. H. S. Barwell. He is reported as saying "that the high altitude of Swiss resorts made these unsuitable for laryngeal cases, which in the early stage might give rise to no symptoms."

It is, of course, possible that a fuller account of Mr. Barwell's paper would show some qualification of this assertion. As it stands, however, it is directly opposed to my experience and to that of the Swiss colleagues with whom I have discussed the matter. It is certainly contrary to the opinion of our visiting consulting laryngologist, Dr. O. Gentinetta, of Sierre, who, for nearly ten years past, has followed the course of laryngeal tuberculosis in hundreds of patients, both in the Rhône Valley and at Montana—a difference in altitude of approximately 3500 feet. Dr. Rüedi, the well-known laryngologist of Davos, who has had exceptional opportunities of observing results in this complication of pulmonary tuberculosis, should be able to disprove authoritatively the reported account of Mr. Barwell's views.

Since Montana Hall was opened at the end of 1930, excluding those at present in residence, 29 patients with laryngeal tuberculosis have been treated here. In 13 of these the disease appeared clinically healed on or before discharge. One of these developed later intestinal tuberculosis, with aggravation of the pulmonary condition and subsequent death, but there was no recrudescence of laryngeal activity. This is in conformity with Dr. Heaf's observations. In eight patients, on departure, the disease in the larynx was improved but not yet completely healed. In two advanced pulmonary cases the laryngeal lesions remained stationary. In three very advanced cases, all of whom died after leaving this institution, the laryngeal disease was worse, and the three remaining patients died in the sanatorium shortly after arrival. With regard to those patients who did badly all were sent here in a toxic state, and with extensive and destructive lesions of the lungs. They would, in my opinion, have done equally badly wherever treated.

Fishberg, with his vast experience of the effect of many different climates and altitudes in America specifically mentions in this regard only "advanced" laryngeal lesions as being a contra-indication to treatment at a "high altitude." Cold dry air, as met with in the Alps, is likely to increase the discomfort of those patients who have much associated œdema, particularly of the epiglottis, and such patients should not be sent to the mountains. It has been my experience, however, that these cases do no better at a lower altitude. The prognosis, in fact, as some of the speakers in Dublin pointed out, depends essentially on the condition of the lungs, since it is the nature and response to treatment of the pulmonary disease which almost uniformly determines the nature and course of the laryngeal lesions.

The 21 patients who did well showed varying degrees of infiltration, ulceration, and granulation of the larynx—in some cases a combination of all three processes. In none of them was the epiglottis involved. In addition to ordinary sanatorium routine, in particular general rest and rest of the larynx, 11 were treated by a combination of collapse and gold therapy, 6 with artificial pneumothorax, and 5 with phrenic evulsion. Four had sanocrysin without collapse treatment. Two had artificial pneumothorax, and one phrenic evulsion without chemotherapy. Three had no special treatment. In none of these cases was any form of local treatment to the larynx employed.

These experiences are seemingly so at variance with Mr. Barwell's reported statement that I venture to give them this publicity.

I am, Sir, yours faithfully,

HILARY ROCHE,
Medical Superintendent, The British Sanatorium, Montana.
Sept. 25th, 1933.

PHYSICAL EXERCISES IN MIDWIFERY

To the Editor of THE LANCET

SIR,—That puerperal exercises such as those devised by Miss Randell and Miss Morris and described in your issue of Sept. 23rd are successful in practice I can testify from my own experience with them. We started using them in Stonefield Maternity Home 10 years ago and since then have had the opportunity of observing some 1400 cases. The results have been very satisfactory. We are in touch with a number of our patients after they leave the Home (especially when anything abnormal happens to them) and have only heard of prolapse serious enough to call for an operation in two cases. Those who have had a normal figure before pregnancy find they can regain their normal waist measurement by the end of the month. We consider an increase of one inch to be allowable and this is only exceeded by those who have obviously put on weight during pregnancy. Nurses who have previously been accustomed to dealing with patients who do not do exercises in bed notice that our patients get on to their feet much more quickly and easily when the time comes to get up.

For a year we have used the exercises arranged by Miss Morris in the antenatal and postnatal stages and find them entirely satisfactory. She has added an æsthetic element, and most women now enjoy their exercises whereas many find the more ordinary medical ones dull and have to be persuaded to do them. To get the very best results some system of exercises needs to be used throughout pregnancy and the puerperium.

There seems to be very little need for a binder. Some multiparæ who have a very lax abdominal wall and primiparæ who have suffered undue distension find a binder useful and comfortable in the first two days. After that some like to have it back at night but we do not find it to be needed after the fifth day.

Most of our patients do some exercises in the postnatal period. A special form of deep breathing is begun within 24 hours of delivery and another equally simple exercise is taught on the following day. At first all exercises are done lying, then sitting ones are added. One of these arranged by Miss Morris involves full movement of the shoulders and pectoral muscles and this seems to have a particularly good effect in preventing undue engorgement of the breasts. When the patient gets up some of the earlier exercises are discontinued and she is advised to do at home certain selected ones which take about 10 minutes a day.

I am, Sir, yours faithfully,

CYRIL V. PINK, M.R.C.S., L.R.C.P.
Stonefield Maternity Home, Blackheath, S.E.,
Oct. 5th, 1933.

MODERN CARDIOLOGY

To the Editor of THE LANCET

SIR,—There is one sentence in Prof. Hay's St. Cyres lecture I would venture to dispute (THE LANCET, Oct. 7th, p. 794). It is this: "These pioneers laid the foundation on which modern cardiology is built," referring to Mackenzie, Wenckebach, and others. Does he really mean to ignore the experimental production of carditis from rheumatic lesions and to lose sight of the fact that if any investigations threw light on the future of cardiology—whatever that word may precisely mean—those did? Ignored by many cardiologists in this country, other countries more alert realise that the prevention of heart disease—surely one aim of the cardiologist—is intimately bound up with that advance.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 6th, 1933. F. JOHN POYNTON.

CYSTICERCOSIS IN EX-SOLDIERS

To the Editor of THE LANCET

SIR,—An investigation now in progress shows that cysticercosis is responsible for some considerable proportion of cases of epilepsy in the army, particularly—though not exclusively—epilepsy commencing in previously normal adults who are serving, or have served, abroad.

At the date of writing we have records of 49 proved cases of such infestation (with full case histories in 35), but we know that this number is not complete for the period covered. Apart from other and more obvious reasons for failure to recognise cysticercosis, diagnosis as a practical matter may become possible only in course of time, perhaps long after the subject of the infestation has left the army. For example, the onset of epileptic seizures may bring to notice the presence of pre-existing cysts in the tissues; or the appearance of palpable cysts may suggest the real nature of an epilepsy of some standing. Again, the death and subsequent calcification of encysted larvæ not previously detectable may determine a diagnosis by radiological examinations.

It would be of very great assistance in this investigation if any medical man who makes a diagnosis of cysticercus infection in an ex-soldier, whether encountered in an institution or in the course of practice, could see his way to notify the professor of tropical medicine at this college. The information would be still more helpful if it were possible to include with the patient's name his army number, regiment, &c., and the date of his leaving the service, so that his medical history as a soldier could be traced.

It might be advisable to point out that in the great majority of these cases of cysticercosis there is no ascertainable history of infestation with an adult *Tænia solium* at any time; and also that there is no symptomatic feature of the type of epilepsy which may be caused to differentiate it from one or other of the various classical forms of that disorder.

The investigation in question is concerned with the prevalence of cysticercosis in the army, but it is not inferred that the disease is in any way peculiar to soldiers.—I am, Sir, yours faithfully,

W. P. MACARTHUR.

Royal Army Medical College, Millbank, S.W.,
Oct. 10th, 1933.

RED BLOOD-CELL DIAMETERS

To the Editor of THE LANCET

SIR,—In the review of Price-Jones' text-book on the above subject in your issue of Sept. 2nd it is stated that "None of the short cuts to red cell measurement, as halometer methods or hæmatocrit determinations, give any indication of the degree of variability." This is true of the diffraction-method as first described by me in 1919, 1923, 1924, and 1925, and it is also true of all the apparatus exploiting this diffraction-principle which have been placed on the market since, and which go under the name of halometer, improved halometer, eriometer, and erythrocytometer. But it is different with the improved diffraction-micrometer which I described in 1929.[1] This apparatus gives information on the degree of variability which compares quite well with the results of direct microscopic measurement, as I have shown (Jour. Path. and Bact., 1931, xxxiv., 771). May I add that a well-known optical firm will shortly put on the market an apparatus embodying my ideas, which will place all the advantages of this more complete diffraction-method at the disposal of every practitioner? It will give mean diameter and degree and quality of anisocytosis in a couple of minutes.—I am, Sir, yours faithfully,

ADRIANUS PIJPER, M.D.

Pretoria, Sept. 20th, 1933.

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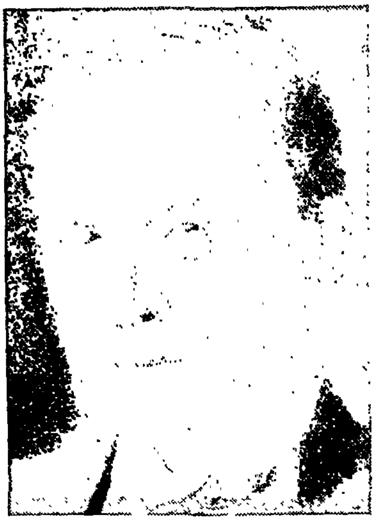
[1] Brit. Med. Jour., 1929, i., 635.

OBITUARY

WILLIAM HOPE FOWLER, M.B., Ch.B. Edin.

THE death occurred on Wednesday, Oct. 4th, at his Edinburgh residence, of Dr. William Fowler, consulting radiologist to the Royal Infirmary, Edinburgh, at the premature age of 57. The sad event adds one more to the list of radiologists who have suffered severely by the practice of their specialty, for he had at different times lost two fingers, and last year had to have his right arm amputated.

William Hope Fowler, an Edinburgh man, was born in 1876 the son of Robert Fowler, an accountant. He was educated at Daniel Stewart's College and Edinburgh University, and he graduated M.B., Ch.B. in 1897, later taking the diploma of F.R.C.S. Edin. He was a distinguished student, holding several valuable prizes, among others the Heriot Research Fellowship and a Thomson Bursary. On qualification he filled the house appointments at the Royal Infirmary and later did post-graduate work, in the directions of which he afterwards made a life-study, in Berlin, Vienna, and Paris. In 1901 he was appointed assistant medical electrician to the infirmary, and ten years later became full radiologist to the institution, a post which he resigned in 1926, when he was appointed to consulting rank. While his association with the Royal Infirmary may be said to have constituted his main professional work, he was radiologist for a period to the Royal (Dick) Veterinary Hospital, to the Bangour Mental Hospital, and physician to the Newtown Dispensary. He lectured also on radiology at the Surgeon's Hall, Edinburgh, and was an examiner on the subject for the Edinburgh double qualification. During the war Fowler did valuable service as consulting radiologist to the Admiralty and as a member of the War Office X Ray Commission; he held these posts from the beginning to the end of the struggle, but it was not until the last year of his life that he received public recognition by the conferring upon him of the C.V.O.



DR. W. H. FOWLER

[*By courtesy of "The Scotsman"*]

For a man with a reputation so widely grounded he wrote little. He was first and foremost practical, and he embodied his ideas in his lectures. In the one or two articles which he published he showed a full grasp of his subjects with a particular attraction for the strictly scientific side of X ray work. With Dr. W. T. Ritchie he did some excellent work in applying the X rays to the heart and aorta. But it is to be regretted that he left so few records, for his radiological equipment was quite exceptional, as was fully recognised at radiological conferences.

An Edinburgh correspondent writes: "To understand the influence which Fowler had with the medical profession in Scotland, it was necessary only to hear the appreciations of his work by his colleagues. He was full of invention and endless adaptation of X ray to various classes of work. Whenever the question of an X ray plate was raised, all answer was 'go to Hope Fowler.' It is rare that a specialist carries with him so completely the sympathy and understanding of a whole profession. Probably his bright and vivid manner had something to do with it; but one had only to speak to him to see that here was a mind of exceptional freshness, clearness of purpose, and broad culture."

In private life Fowler was extremely popular with colleagues and friends, and his death leaves a large gap among them. He married Julia, daughter of Dr. James Cant of Ore Bridge, and was a recent widower, while there were no children.

DR. CHARLES MAYO

THE death took place on Thursday, Sept. 28th, at his house in Great Yarmouth, of the veteran, Dr. Alfred Charles Mayo who, until his failure in health some few years ago, occupied in the town a prominent place both as practitioner and public servant.

Alfred Charles Mayo was born in 1845 and received his medical education at King's College Hospital, qualifying in 1870 with what was at that date the usual combination of diplomas, M.R.C.S. Eng., L.S.A. As quite a young man he joined a well-established firm of practitioners in Great Yarmouth and carried on a large practice, later succeeding the senior member of his firm to a seat on the town council, and in other municipal capacities. Mayo served for over 40 years on the council, from which he did not retire as an alderman until he was over 80 years of age. He was a magistrate of the borough for nearly 40 years, and until recently attended regularly on the bench, where he displayed the qualities rightly esteemed by the public of fairness and generosity. He was a director both of the Yarmouth Water Co. and of the Yarmouth Gas Co., and in 1904 was mayor of the town. Dr. Mayo's death was the occasion of well-deserved encomiums from the chairman of the bench of magistrates and from others who have been associated with him in professional and municipal affairs. The practice remains in the hands of his son, Dr. Herbert Reginald Mayo.

Dr. **LILIAN ENID WATNEY**, whose death on Oct. 4th is reported from Hankow, had been a medical missionary of the China Inland Mission since 1911. Her father was the late Herbert Watney, M.D., of Pangbourne, and her brother, Dr. Martyn Watney, like herself, became a medical missionary. Born at Pangbourne in 1883, she was educated at home at Bedford College and at University College, London, receiving her medical education at the School of Medicine for Women. She graduated as M.B. Lond. in 1910, and after holding several hospital appointments left for China in the following year. She did valuable medical work at several mission stations, but was eventually, forced to return to England owing to ill-health. Two years ago, however, she was sufficiently recovered to return to China.

Dr. **ALFRED JAMES BARNES**, who died in London on Oct. 3rd, was qualified both in medicine and pharmacy. He was educated at the Catholic University School of Medicine and the Adelaide Hospital in Dublin, and at the Edinburgh Royal Infirmary. He took the L.A.H. Dub. in 1900, but five years previously had passed his pharmaceutical examinations. Until 1928 he practised in Dublin as both doctor and pharmacist, but in that year he settled in London, where he became medical representative of Messrs. Menley and James. He leaves a widow with a son and daughter.

MEDICAL NEWS

University of Liverpool

At recent examinations Dr. Mary Coutts and Dr. G. A. C. Lynch were approved for the diploma in public health.

Royal Academy of Medicine in Ireland

Mr. Richard Atkinson Stoney has been elected president of the Royal Academy of Medicine in Ireland in succession to Prof. T. G. Moorhead. Mr. Stoney is senior visiting surgeon to the Royal City of Dublin Hospital, and the immediate past president of the Royal College of Surgeons in Ireland.

Hunterian Society

The first dinner meeting of the new session will be held by this society at Simpson's Restaurant, Bird-in-Hand-court, 76, Cheapside, London, on Monday, Oct. 16th, at 7.15 P.M. About 8.30 P.M. Mr. W. E. Tanner will deliver his presidential address on the influence of medicine on surgery.

Chelsea Clinical Society

The annual dinner of this society will take place at the Hotel Rembrandt, Thurloe-place, London, S.W., on Wednesday, Oct. 18th, at 8 P.M. The secretary for the dinner may be addressed at 8, Lower Sloane-street, London, S.W.1.

German Research Workers in Manchester

A fund has been raised for the establishment in the University of Manchester of a number of research fellowships to be held by Germans who have been dismissed from their posts. The fellowships, to which appointments are made for not more than two years, will throw no financial burden on the University and will in no way narrow the field open to British graduates. Though the holders will probably help in the teaching of advanced students they will be under no obligation to do so. Among the Fellows so far appointed are Dr. Walther Deutsch, of Düsseldorf (department of physiology), and Prof. David Katz, of Rostock (department of psychology).—It is also announced that the Manchester Victoria Memorial Jewish Hospital has appointed to its honorary consulting staff the three brothers Zondek, who have until lately been attached to the University of Berlin; Dr. Hermann Zondek (late professor of internal medicine) is to be consulting physician; Dr. Bernhard Zondek (late professor of gynæcology), consulting gynæcologist; and Dr. S. G. Zondek (late professor of pharmacology), consulting bacteriologist.

Biochemical Society

This society is holding a meeting at Messrs. Boots Ltd. research laboratories, Nottingham, to-day, Saturday, Oct. 14th, when various communications will be made.

Industrial Welfare Society

This society has arranged a conference at the Hotel Victoria on Tuesday, Oct. 17th, at 4 P.M., when Dr. W. J. O'Donovan, M.P., will read a paper on dermatitis, and a discussion will follow.

Naval Medical Compassionate Fund

At a quarterly meeting of the directors of this fund, held on Oct. 6th, with Surgeon Vice-Admiral Sir Reginald Bond, medical director-general of the Navy, in the chair, the sum of £177 was distributed among the several applicants.

Glasgow University Club, London

This society will dine at the Trocadero Restaurant, Piccadilly, London, W., on Friday, Nov. 10th; at 7.15 for 7.30 P.M., with Sir Robert Bruce in the chair. The honorary secretaries may be addressed at 62, Harley-house, N.W.1.

Royal Institution

The Friday evening discourses begin on Oct. 27th and continue until Dec. 15th. There are also to be several series of lectures, including one by Prof. G. Elliot Smith, F.R.S., on the nervous system, at 5.15 P.M. on Tuesdays, from Oct. 24th to Nov. 14th. Further particulars may be had from the general secretary at 21, Albemarle-street, London, W.1.

South-West London Medical Society

This society, under the presidency of Dr. George Pollock. holds its first meeting on Oct. 18th, when Dr. L. S. T, Burrell will give an address on spontaneous pneumothorax. There will be a lecture by Dr. Ulysses Williams (will an X ray examination be helpful ?) on Nov. 8th: and by Mr. P. H. Mitchiner (when to "wait and see" in acute appendicitis) on Dec. 13th. Other speakers will include Dr. Jacques Forestier, Dr. Gerald Slot, Dr. T. C. Hunt, and Mr. C. P. G. Wakeley. The Bolingbroke lecture will be given on June 13th by Mr. Comyns Berkeley, whose subject will be carcinoma of the cervix uteri. The meetings are held at the Bolingbroke Hospital, Wandsworth Common, at 9 P.M., and the honorary secretaries are Dr. E. G. Housden, 51, Longley-road, S.W.17, and Dr. A. W. Wells.

King's College Hospital Dinner

The annual dinner of the King's College Hospital medical school was held at the Connaught Rooms on Sept. 30th with Mr. Arthur Edmunds in the chair. After welcoming the guests, amongst whom were Dr. Langdon Brown, regius professor of physic at Cambridge, Prof. D. M. Blair and Prof. R. J. S. McDowall from King's College, and Judge Sturges, the chairman proposed the toast of the Medical School and the Hospital. Dr. Alexander Drake, dean of the medical school, in his reply, mentioned that the school was now nearly six times bigger than it was in pre-war days. The new buildings, which were opened this July by Prince George, will furnish the extra accommodation needed and will be a great asset to the school. A record number of old students were at the dinner.

During the afternoon an intensive post-graduate course was held at the hospital and was largely attended. This course has now become an annual feature and will be continued in future years.

Extensions at Droitwich Spa

A party of medical men, of whom the majority were members of the medical advisory committee of the British Health Resorts Association, attended the opening on Oct. 6th at Droitwich, of the St. Andrew's brine baths extension and the Royal clinic. Lord Meston, chairman of the B.H.R.A., performed the function. The party was conducted round the various establishments by the director and assistant director. Their first visit was to the St. Andrew's baths, the principal bathing establishment of the spa, when the new street front necessitated by the extension was admired. These baths fell recently into a state of disrepair owing to the ravages of the corrosive brine vapour, and have now been overhauled and remodelled at considerable expense, a new X ray department and reception lounges having been provided. The Royal clinic, which was next inspected, is a residential hostel intended for patients of strictly limited means, and here they can be housed and treated for so low a sum as 3 to 4 guineas a week. A small laboratory is attached to the clinic where vaccines are prepared and necessary investigations made. On visiting the great brine pumping stations, a short address was given to the assembly on the origin of the brine, after which members of the party sampled the various methods whereby brine therapy can be applied. At the luncheon which followed later in the new winter garden, speeches were made by Mr. William Ivey, chairman of the Hesketh Estates, Ltd., which own the spa, and Lord Meston. The latter appealed for more adequate support for the British Health Resorts Association, whose sole ambition, he said, was to aid in the development of the idea of the British health resorts for the British people—"it endeavours to help to foster development, both from the medical and lay side, with this end in view." The Mayor of Droitwich referred to Lord Meston's record of service in India, and hoped that his present work on behalf of the British health resorts would not go unsupported. The health of the guests was proposed by Mr. W. Nash, the chairman of the Droitwich Development Corporation, and replied to by Dr. R. A. Young, who pointed out the advantages which would follow a wise policy of development of the British Health Resorts Association. Dr. Young referred briefly, in conclusion, to the work of the secretary of the B.H.R.A., Dr. Alfred Cox. Mr. Elliston, M.P., editor of the *Medical Officer*, also replied.

Royal Dental Hospital School of Dental Surgery

The prizes awarded during the winter and summer sessions 1932–33 were presented at a conversazione on Oct. 6th by Sir Holburt Waring, president of the Royal College of Surgeons of England. For many years, he said, owing to a curious succession of circumstances, he had been very closely connected with the dental profession. That profession at the present time was the most closely guarded of any against unqualified practice, which was a great advantage to it, and he wished the medical profession were more like it in this respect. He outlined the statutory position of the dentist in relation to the Dental Board and the General Medical Council, and said that the Royal College of Surgeons had licensed 4594 of the 12,319 dentists practising in England and Wales at the present time. Other licensing bodies included many universities, the Royal Colleges of Surgeons of Edinburgh and Ireland, and the Royal Faculty of Physicians and Surgeons of Glasgow. The University of London was one of the latest to establish a degree of bachelor of dentistry. Scotland, curiously enough, did not give a single degree in dentistry; Edinburgh and Glasgow refused all dealings with dentists, but St. Andrews granted a licence, talked of establishing a degree, and already had an interesting diploma of dentistry relating to public health. Dentistry, continued Sir Holburt, was an important part of the practice of medicine, and could not be separated from it either in education or in practice. Medicine and dentistry should be two parts of the faculty of medicine of a university, and the two schools should be very closely connected. Nevertheless the courses in medicine, surgery, and pathology should be given separately for medical and dental students. Since dentistry was a learned profession, a higher degree ought to be obtainable by its practitioners, and he personally felt that a college with over 4000 licentiates ought to give the good ones among them a chance to obtain something more than a licence to practise. A dental hospital ought to be the dental department of the general hospital which was the hospital of the faculty of medicine, and the dental staff ought to have a certain number of beds. Finally, Sir Holburt stressed the importance of better coöperation between doctor and dentist in practice.

Hackney Medical Society

At the first meeting of the session Dr. E. A. Gregg, chairman of the central committee of management of the London Public Medical Service, will give an address on the service. Sir Frederick Hobday, on Nov. 22nd, will lecture on some diseases analogous in animals and man, and their comparative aspect; and on Dec. 13th Mr. R. Coyte will speak on the enlarged prostate. A visit to Hackney Hospital will be paid on Jan. 10th, 1934, and later in the year there will be addresses by Dr. C. C. Worster-Drought, Dr. Bruce Williamson, and Dr. Robert Klaber. The chairman for the session is Dr. C. E. Evans and the honorary secretary Dr. Bernard Homa, 20, Dalston-lane, London, E.8.

International Union against Tuberculosis

At the annual meeting of the council of this union, held in Paris in July, it was decided that next conference should be held in Warsaw from Sept. 4th to 6th, 1934. The chief subjects of discussion will be biological variations of the tubercle virus; medical and surgical forms of tuberculosis of the bones and joints, and their treatment; and the utilisation of dispensaries for the treatment of tuberculous patients. Particulars may be had from the secretary of the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock-square, London W.C. 1.

Ladies' Medical Golfing Society

The autumn meeting was held at Northwood Golf Club on Oct. 4th. The results were as follows: 1st Division. Scratch prize: Mrs. Pedler, 88. Handicap prizes: Mrs. Gordon Holmes, 96—15=81; Mrs. Lewis-Smith, 93—11=82; Mrs. Russell-Smith, 88—6=82. 2nd Division. Scratch prize: Lady Goadby, 98. Handicap prizes: Mrs. Sneyd, 105—33=72; Mrs. Maxwell-Chance, 107—35=72; Mrs. Gardiner Hill, 104—29=75. Bogey Greensomes: Mrs. Collis-Browne and Mrs. Lewis-Smith, 3 up; Mrs. Redler and Miss S. Dudgeon, 1 down. The "Cecil Leitch" Challenge Cup for best net return: Mrs. Sneyd, 105—33=72.

Mayo County Hospital

Dr. Ward, Parliamentary Secretary to the Minister for Local Government and Public Health in the Irish Free State, recently laid the foundation-stone of the new Mayo County Hospital at Castlebar, which will cost £65,000, and contain 124 beds. It will occupy the site of the old county gaol in which Dr. Ward was three times imprisoned. The foundation-stone of Mayo limestone will be the only stone in the building, which will be entirely of concrete.

PUBLIC HEALTH SERVICES

Food-poisoning in London

Ten cases of food-poisoning, of which two have proved fatal, occurred at the end of last week; eight in St. Pancras and two in Holborn. The fatal cases were those of two boys, one aged 11 and one aged 12. One of these ate some pease-pudding, bought at a shop in St. Pancras, at 8 P.M. on Oct. 7th. He went to bed soon afterwards, having given some of the pudding to a friend, and woke at 3 A.M. with vomiting and diarrhœa and passed blood-stained motions. The doctor called in sent him to Highgate Hospital, where he died at 7 P.M. on Oct. 8th. The other boy died at 9 P.M. A third boy was taken to University College Hospital with the same symptoms, also pronounced tachycardia, and is now recovering. The symptoms of the other cases were similar—vomiting, diarrhœa, passage of blood and mucus from bowel, abdominal pain, rapid pulse, and cyanosed extremities.

The pease-pudding was made of dried split-peas, boiled in water with salt and sodium bicarbonate in an enamelled saucepan and put to cool in an earthenware basin. Investigations are being made to exclude the possibility of chemical poisoning. We understand that a bacillus of the Flexner group has been isolated from the stools of patients at University College Hospital and at Highgate Hospital.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SATURDAY, SEPT. 30TH, 1933

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 4 (last week 4); scarlet fever, 3473 (last week 3117); diphtheria, 1155; enteric fever, 82; acute pneumonia (primary or influenzal), 662; puerperal fever, 49; puerperal pyrexia, 116; cerebro-spinal fever, 18; acute poliomyelitis, 30; acute polio-encephalitis, 2; encephalitis lethargica, 13; continued fever, 1; dysentery, 32; and ophthalmia neonatorum, 71. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 3rd–4th was as follows: Small-pox, 11 under treatment, 1 under observation; scarlet fever, 2354 (last week 2090); diphtheria, 1663; enteric fever, 23; measles, 362; whooping-cough, 225; puerperal fever, 26 (plus 11 babies); encephalitis lethargica, 255; poliomyelitis, 5; "other diseases," 150. At St. Margaret's Hospital there were 19 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there were no deaths from small-pox, 4 (0) from enteric fever, 2 (1) from measles, 12 (3) from scarlet fever, 14 (3) from whooping-cough, 32 (8) from diphtheria, 94 (23) from diarrhœa and enteritis under two years, and 19 (0) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa and enteritis in young children 7 were in Liverpool, 5 in Hull, and 4 each in Middlesbrough, Birmingham, and Wolverhampton. Five fatal cases of diphtheria were recorded in Hull, and there were 4 deaths from influenza in Birmingham.

The number of stillbirths notified during the week was 260 (corresponding to a rate of 44 per 1000 total births), including 49 in London.

Birmingham Maternity Hospital.—This institution has been completed by the addition of a new hostel for nurses, which was recently opened by Mrs. Neville Chamberlain.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Oct. 17th.—5.30 P.M., General Meeting of Fellows. 8 P.M., Pathology. F. M. Burnet: The Use of the Developing Egg in Virus Studies. I. A. Galloway: The Differentiation of the Virus of Vesicular Stomatitis from the Virus of Foot-and-Mouth Disease. D. H. Patey: Tuberculous Disease of the Parotid Gland. J. A. Murray: Improvements in the Methods for Staining Frozen Sections. Demonstration: A. J. B. Goldsmith: An Unusual Case of Splenomegaly.

Thursday.—5 P.M., Dermatology. (Cases at 4 P.M.) Dr. F. Parkes Weber: 1. Sequel of a Case of Polydermatomyositis. Dr. A. Burrows (for Dr. O'Donovan): 2. Leprosy. Dr. G. B. Dowling: 3. Prurigo Nodularis. Dr. H. W. Allen (for Dr. Dowling): 4. ? Eruptive Hidradenoma. Other cases will be shown. 8.30 P.M., Neurology. Dr. S. A. Kinnier Wilson: Megalencephaly. (Presidential address.)

Friday.—5.30 P.M., Physical Medicine. Dr. M. B. Ray: The Rheumatic Hand. (Presidential address.) 8.15 P.M. Obstetrics and Gynæcology. Dr. Reginald Lightwood and Dr. J. C. Hawksley: Icterus Gravis Neonatorum and Allied Conditions. Discussion on Sympathectomy for Dysmenorrhœa, to be opened by Mr. A. A. Davis, Mr. Malcolm Donaldson, and Mr. Sidney Forsdike. 7 P.M., Radiology. Dr. R. S. Paterson: Some Problems of Modern X Ray Work. (Presidential address.)

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, Portland-place, W.

Thursday, Oct. 19th.—8.15 P.M., Major-General Sir Leonard Rogers: Methods and Results of Forecasting Cholera, Small-pox, and Plague in India. (Presidential address, illustrated by lantern slides.) Demonstration at 7.45 P.M.

HUNTERIAN SOCIETY.

Monday, Oct. 16th.—7.15 P.M. (at Simpson's Restaurant, Bird-in-Hand-court, 76, Cheapside), Mr. W. E. Tanner: The influence of Medicine on Surgery. (Presidential address.)

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, Russell-square, W.C.

Friday, Oct. 20th.—5 P.M., Dr. Charles Porter: Presidents and Prophesies. (Presidential address.)

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.

Thursday, Oct. 19th.—8 P.M., Business Meeting. Dr. J. V. Sparks and Dr. F. G. Wood: Radiology in the Diagnosis of Heart Disease. (Discussion to be opened by Dr. John Parkinson.)

Friday.—11 A.M., Visit to the Hospital for Consumption, Brompton. 5 P.M., Dr. J. F. Brailsford: Radiographic Diagnosis of Spondylolisthesis.

NORTH-WEST LONDON MEDICAL SOCIETY.

Tuesday, Oct. 17th.—9 P.M. (at the Regent Rooms, Regent Cinema, Finchley-road, Golder's Green, N.W.), Sir Harold Gillies: Plastic Surgery—General scope and some modern applications.

HACKNEY MEDICAL SOCIETY, Metropolitan Hospital, Kingsland-road, E.

Wednesday, Oct. 18th.—9.30 P.M., Dr. E. A. Gregg: The London Public Medical Service.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

Wednesday, Oct. 18th.—4 P.M., Sir Thomas Lewis Harveian Oration.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Oct. 16th, to Saturday, Oct. 21st.—St. John's Hospital for Diseases of the Skin, Leicester-square, W.C. Afternoon Course in Dermatology. Clinical instruction daily and lectures twice a week.—London Clinic and Institute of Physical Medicine, Ranelagh-road, S.W. Evening Course of lecture-demonstrations on Physical Medicine.—National Hospital for Diseases of the Heart, Westmoreland-street, W. Post-graduate Course in Cardiology, for advanced students, occupying the whole of each day.—Royal Albert Dock Hospital, E. Week-end Course in Clinical Surgery, occupying the whole of Sat., Oct. 21st and Sun., Oct. 22nd.—Panel of Teachers: Individual clinics are available [illegible] ment with the Fe[illegible] are open only t[illegible] Associates of the Fellowship.

NATIONAL HOSPITAL, QUEEN-SQUARE, W.C.

Monday, Oct. 16th.—3.30 P.M., Dr. Symonds: Fits and Epilepsy.

Tuesday.—Dr. Denny Brown: The Physiology of Muscle.

Wednesday.—Dr. Collier: Clinical Demonstration.

Thursday.—Dr. Riddoch: The Cranial Nerves and special senses.

Friday.—Dr. Bernard Hart: The Psychoneurosis (2).

Out-patient clinics each day at 2 P.M.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, Oct. 16th, to SATURDAY, Oct. 21st.—Intensive Post-graduate Course daily. (Third Week.)

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 18th.—4.30 P.M., Mr. H. P. Winsbury White: Diagnosis of Urinary Tract Diseases in General Practice.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Chandos-street, W.C.

SUNDAY, Oct. 15th.—10.30 A.M., Mr. J. Bright Banister: Hæmorrhage in Pregnancy. 11.45 A.M., Dr. E. C. Warner: Some Points in the Ætiology and Treatment of Rheumatic Diseases.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Oct. 19th.—4.30 P.M., Dr. R. P. Williams: Water-supply in Relation to Disease. 9 P.M., Sir Charlton Briscoe: Pneumonia.

LONDON SCHOOL OF DERMATOLOGY, ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, Oct. 17th.—5 P.M., Dr. H. T. Barron: Purpura.

WEDNESDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ousely-road, Balham, S.W.

WEDNESDAY, Oct. 18th.—8.30 P.M., Capt. I. P. Muller: The Muller Exercises.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL Post-graduate Lectures.

WEDNESDAY, Oct. 18th.—3 P.M., Lord Horder: Eugenics and the Doctor.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, 1, Keppel-street, W.C.

WEDNESDAY, Oct. 18th.—5 P.M., Prof. Cyril Burt, D.Sc.: The Normal and Subnormal Mind. (First of five Heath Clark lectures.)

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Oct. 18th.—3.30 P.M., Dr. J. F. Halls Dally: Low Blood Pressure, its Cause and Effects.

ROYAL INSTITUTE OF PUBLIC HEALTH, 23, Queen-square, W.C.

WEDNESDAY, Oct. 18th.—4 P.M., Sir Ernest Graham-Little: Medical Education and the Public Health.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Oct. 19th.—4.15 P.M., Dr. N. Kletz: Involuntary Movements.

LEEDS GENERAL INFIRMARY Post-graduate Lectures.

TUESDAY, Oct. 17th.—4 P.M., Mr. Braithwaite: Demonstration of Surgical Cases.

MANCHESTER ROYAL INFIRMARY Post-graduate Course.

TUESDAY, Oct. 17th.—4.15 P.M., Mr. John Morley: Diagnosis and Treatment of Lumps in the Breast.

FRIDAY.—4.15 P.M., Dr. A. Ramsbottom: Demonstration of Medical Cases.

Appointments

BENDIX, F. E., L.R.C.P. Lond., M.R.C.S., has been appointed Deputy Medical Officer of Health, East Ham.

CUBIE, ALEXANDER, M.B., Ch.B. Glasg., Assistant to the Medical Superintendent at the Liverpool Sanatorium, Delamere Forest, Frodsham.

EVANS, JAMESON, L. P., M.B., B.Chir. Camb., Assistant Surgeon to the Birmingham and Midland Eye Hospital.

VINCENT, E. W., M.B., Ch.B. Leeds, Medical Officer of Health, Filey.

Harrogate General Hospital: GREENWOOD, W. O., M.D. Leeds, F.R.S. Edin., Obstetrician and Gynæcologist; KAY, GLADYS, M.D., B.S., B.Sc. Lond., and CAMPBELL, E. GORDON, M.B., B.Ch., B.A.O. Dub., D.P.H., Assistant Gynæcologists and Obstetricians.

Manchester Victoria Memorial Jewish Hospital: STOPFORD, J. S. B., M.D. Manch., Honorary Consulting Anatomist; JEFFERSON, G., M.B., B.S. Lond., F.R.C.S. Eng., Honorary Consulting Neurologist; and OLLERENSHAW, R., M.D. Manch., F.R.C.S. Eng., Honorary Consulting Orthopædist.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.: YOUNG, J., M.B., Ch.B. Glasg., Senior Resident Medical Officer; BUDDEE, F. W., M.B., Ch.M. Syd., Assistant Resident Medical Officer; WILSON, E. M. P., B.Chir. Camb., District Resident Medical Officer.

London County Council Hospital Staff.—The following appointment is announced: HOLMES, JOHN MCD., A.M.O.II., St. Stephen's.

Vacancies

For further information refer to the advertisement columns

Birmingham, Dudley-road Hospital.—Jun. M.O.'s. Each at rate of £200.

Birmingham General Hospital.—Med. Reg. and Res. M.O. £155.

Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.

Bradford Royal Infirmary.—H.P. and two H.S.'s. Each at rate of £135.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Hon. Assts. in Out-patient Dept.

Chichester, Royal West Sussex Hospital.—Jun. H.S. At rate of £125.

[illegible] *wich, S.E.*—Asst. M.O. £250.

[illegible] y M.O. £500.

[illegible] and School M.O. £900.

[illegible] —H.S. At rate of £160.

Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. At rate of £150.

Edenbridge District Hospital, Kent.—Hon. Surgeon to Ear, Nose and Throat Dept.

[illegible] *-West London Hospital, Haverstock-* [illegible] ate of £100.

[illegible] *alysis, Maida Vale, W.*—Two Hon. Asst. Surgeons. Also Res. M.O. and H.P. At rate of £150 and £100 respectively.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. At rate of £100.

Ilford, King George Hospital.—H.P. and H.S. Each at rate of £100.

Kidderminster and District General Hospital.—H.S. £150.

Liverpool Royal Children's Hospital.—Res. Surg. O. for Heswall Branch. At rate of £120.

London Hospital, E.—Hon. Asst. Physician to Skin Dept.

London Jewish Hospital, Stepney-green, E.—Res. M.O. and H.P. Also Cas. O. Each at rate of £150. Also H.S. At rate of £100.

London Missionary Soc.—Med. Woman for Mbereshi, Northern Rhodesia.

Maidstone, Kent County Ophthalmic and Aural Hospital.—H.S. to Ear, Nose and Throat Dept. At rate of £200.

Manchester, Ancoats Hospital.—Radiological Officer. £300. Also Res. M.O. At rate of £150.

Manchester, Christie Cancer Hospital and Holt Radium Institute, Withington.—Res. M.O. At rate of £150.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Res. H.S. £120.

Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Asst. M.O. for Crossley Sanatorium. £200.

Midhurst, Sussex, King Edward VII. Sanatorium.—Med. Supt. £1000.

Oldham Royal Infirmary.—Cas. O. and H.P. At rate of £175.

Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital—H.S. At rate of £200.

Queen Mary's Hospital for the East End, E.—Pathologist. £750.

Reading, Royal Berkshire Hospital.—Hon. Ophth. Surgeon.

Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.

Rochester, S [illegible] *ital.*—H.P. At rate of £175.

Rotherham, [illegible] Asst. Res. M.O. £200.

Royal Dent [illegible] *32, Leicester-square, W.C.*—Two Part-time House Anæsthetists. Each 10*s.* 6*d.* per session.

Royal London Ophthalmic Hospital, City-road, E.C.—Refraction Asst. to the L.C.C. School Dept. £160.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.

St. George-in-the-East Hospital, Raine-street, Wapping, E.—Asst. M.O. £250.

St. James' Hospital, Ouseley-road, Balham, S.W.—Asst. M.O. £350.

St. Olave's Hospital, Lower-road, Rotherhithe, S.E.—Asst. M.O. £350.

St. Pancras Hospital, Pancras-road, N.W.—Asst. M.O. £250.

St. Thomas's Hospital.—Surgical Reg.

Salford, Infectious Diseases Hospital.—Jun. Asst. Res. M.O. £200.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.

Sheffield Royal Hospital.—Clin. Asst. for Ophth. Dept. At rate of £400. Also Sen. Cas. O. £150.

Sheffield University.—Asst. Pathologist and Demonstrator of Pathology. £500.

Sidcup, Kent, Queen Mary's Hospital.—Asst. M.O. £250.

Southend-on-Sea General Hospital.—H.P. £100.

Taunton, Taunton and Somerset Hospital.—Sen. House M.O. At rate of £150. Also H.P. and H.S. Each at rate of £100.

Torquay, Torbay Hospital.—Hon. Phys., Hon. Surg. and Hon. Radiologist.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. Physician to Out-patient Dept.

Wakefield, West Riding of Yorkshire County Council Public Health Laboratory.—Asst. Bacteriologist. £500.

Walsall County Borough.—M.O.H. £1000.

West End Hospital for Nervous Diseases, Gloucester-gate, Regent's Park, N.W.—Jun. H.P. At rate of £100.

Western Ophthalmic Hospital, 155, Marylebone-road, N.W.—Sen. and Jun. Res. H.S.'s. At rate of £150 and £100 respectively.

Wolverhampton Royal Hospital.—H.S. Also H.S. to Orthopædic, &c., Dept. Each at rate of £100.

The Chief Inspector of Factories, Home Office, S.W., announces vacancies for Certifying Factory Surgeons at Hornsea, York, East Riding, and at Cross Hill, York, West Riding.

Vacancies for [illegible] the Workmen's Compensation Act [illegible] Athelstone and Coventry (Circuit [illegible] Ipswich, &c. Districts (Circuit [illegible] Circuit 35); and Abergavenny, [illegible] cations should be sent to the P[illegible] ffice, Whitehall, London, S.W.

NOTES, COMMENTS, AND ABSTRACTS

A FAIR INDICTMENT

OUR view of the treatment meted out to animals by man is usually obscured by prejudice of one kind or another. The Arab thinks it brutal to put an exhausted camel to death rather than to leave it to perish in the desert; the foxhunter returning from a kill may lose his temper with a tramp for kicking a dog; the tender-hearted share in imagination every pang of an ill-used animal, and irritate the sturdy by painting these sufferings in sentimental colours. It is difficult indeed to bring a balanced judgment to bear on the question, and readers of Volume II. of the Animal Year Book will be grateful to the University of London Animal Welfare Society for performing the task for them. The title of the book ("Animals, Consider Your Verdict!") and Fougasse's illustration of a judicial lion on the cover strike a reassuring note at the outset, reminding us that it is not constructive to let our feelings be harrowed unduly, and that reforms can be carried out in a cheerful spirit. There is much grim matter in the pages which follow, but it is presented without exhortations to pity, and is the more telling in consequence.

A chapter on the traffic in trapped furs, by J. R. Harman, is enlightening. It is unlikely that many of those who wear furs have any idea of trapping methods. Steel traps are commonly used in which the animal is held captive by a limb until the trapper makes his next visit to the district, often after a period of several days or a week. It appears to be necessary, from the trapper's point of view, that the animal should be alive when found. In August, 1931, A. C. Rowell wrote in *Fur—Fish—Game*, an American periodical: "Some of the animals will be in the traps a week, but in cool weather most of them will live through it and there will be little loss from spoiled skins."

Sometimes an animal escapes by twisting or "wringing off" the captive limb, and sometimes by carrying the trap away with him. When this occurs sepsis will usually end life. To prevent these escapes and to preserve the animal from attacks by other beasts, the trap is sometimes attached to a balance-pole, which springs upright as soon as the animal is caught; he remains hanging from the trap by the injured limb until the next visit of the trapper. A different form of trap—the pince d'Elaski—consists of four barbed hooks, which spring apart when the bait is swallowed and catch inside the throat.

Capt. C. W. Hume suggests that the only remedy for the suffering caused by trapping wild animals lies in a change of women's fashions—"similar," he says optimistically, "to that which has come about in regard to feathers." This hope seems to us to be founded upon two fallacies: first, change in fashion in regard to feathers is a thing which fluctuates, and Capt. Hume may find in a year or two that he has congratulated himself prematurely; secondly, while feathers are purely ornamental, furs are useful. If he is going to wait for humane considerations to outweigh considerations of utility in the public mind, trapped animals will continue to suffer for many years to come. Numerous humane traps have been invented, he tells us, but they are not used. While awaiting a change of heart we might do worse than seek to enforce the use of humane traps. Another line of approach is to popularise (relatively) the furs of animals, such as silver foxes, which can be bred on farms and killed humanely.

A long chapter on animals abroad, written by various contributors of official or scientific standing, gives some idea of the scope of the problem, which does not begin with the mentality of savage races or end with bull-fighting, but covers such issues as the exportation of horses and cattle, the overloading of draught animals, and coursing of hares and rabbits in enclosed spaces. Mr. F. E. Hodgson contributes a lucid chapter on the legal aspects of cruelty to animals in this country, in which we learn that cruelty has been defined as "unnecessary abuse of an animal," and that "necessity," in this sense, does not mean "profit" to some particular person. Mr. G. C. Grindley discusses the sense of pain in animals, and suggests that the animal's behaviour affords the best criterion for judging pain.

A valuable chapter on euthanasia is contributed by Capt. Hume, in which he gives details of appropriate methods of killing various animals. It is noteworthy that he describes the use of motor-car exhaust gas in lethal chambers—an agent which is seriously opposed by Mr. Wakefield Rainey, M.R.C.V.S., in his pamphlet "Euthanasia of Dogs and Cats" (London: Baillière, Tindall and Cox, 1*s.*). The composition of exhaust gas, Mr. Rainey claims, varies considerably with the conditions of combustion of the petrol. Many animals suffer greatly in the presence of exhaust gas, being distressed by both carbon dioxide and petrol vapour, and sometimes becoming frantic with fear; unconsciousness in the exhaust gas chamber does not usually occur until the carbon monoxide in the atmosphere has reached a lethal percentage, and this condition is usually not achieved until about half the atmospheric air in the chamber is displaced by an unbreathable mixture of gases. This means that the dog dies partly from asphyxiation. He condemns the use of exhaust gas on the grounds that it is not fool-proof and cannot, for practical purposes, be made fool-proof. Shooting, he thinks, provides the most humane death for the dog; prussic acid injected into the thoracic cavity is rapid; chloroform should not be used in the absence of the services of an expert anæsthetist, but the administration of coal gas in the lethal chamber does not cause distress; electrocution promises well for the future. His careful observations are valuable, for humanitarians are sometimes apt to judge what the animal would like by what they think they would like themselves, and so it comes about, as Mr. Rainey puts it, that "the dog has to be protected, not only from his enemies but from his friends."

All reform movements, as Capt. Hume points out, have to contend with the apathy of the public, due to narrowness of interests and sympathies. "Although," he says, "most Englishmen are made angry by wrong done to Englishmen, dogs, or horses, nevertheless foreigners, pigs, rats, and rabbits lie beyond the horizon of all but the mentally alert." Such an estimate of our intelligence ought to put us on our mettle, and the Animal Year Book should prove a useful guide to those who wish to extend their sphere of interest or to sympathise with more knowledge.

THE HOSPITALS YEAR BOOK, 1933

THE third issue of this Year Book contains a mass of valuable material, although its timely appearance has reduced the number of provincial hospitals included in the statistical range by nine. There are however five more London hospitals represented this year. In all 63 hospitals (37 in England and Wales, 14 in Scotland, and 12 in Ireland) failed to make returns. A general survey of the finances and work of the voluntary hospitals in Great Britain and Ireland for the year 1931 (which covers over 90 per cent. of the hospitals) shows that they received about 15 million pounds, spent rather more than 14 million pounds and had a surplus of £607,000, which is only about £100,000 less than for 1930. But in his review Sir Charles Harris points out that satisfaction at so relatively small a falling-off, in a year of such rapid shrinkage of the national prosperity, is considerably dashed by the fact that of the £607,000 no less than £554,000 pertains to Ireland. He considers that the effect of the sweepstakes on the Irish accounts is so large as entirely to mask the true position in Great Britain. Indeed the maintenance surplus was in the main applied to making good capital deficiency, and when this was done the net surplus for all the voluntary hospitals in Great Britain and Ireland was only £53,000. It appears that out of a total of £230,000 spent by the hospitals as a result of motor accidents, only £34,000 have been recovered. It is therefore appropriate among the papers on subjects of current interest connected with hospitals that there should be one on the hospital section of the Road Traffic Act and another on the position of the hospitals with regard to sweepstakes. Reports of the annual conference of the British Hospitals Association at Liverpool in June, 1932, and of the meeting arranged by the Association at the Public Health Congress in November last, at which the findings of THE LANCET Commission on Nursing were discussed, are also included. The conclusions and recommendations of the committee appointed to inquire into the out-patient methods at London voluntary hospitals are reproduced. Part I. of the book concludes with a complete list of the 64 memoranda on matters of administrative interest to hospitals which have been prepared by the Central Bureau of Hospital Information. Of the 16 memoranda reprinted in full are those dealing with the insurance of hospitals against certain risks and with the financial arrangements between local authorities and voluntary hospitals for the treatment of tonsils and adenoids. In most cases where the surgeon and anæsthetist receive nothing from the local authority they appear to receive from the hospital some part of the grant made to it.

Part II. of the Year Book contains statistical tables. Part III. begins with the directory of voluntary hospitals which is included every other year. Under the heading of training schools for nurses are fully set out the conditions under which hospitals are approved as training schools, and schemes under which nurses may be trained for admission to the State Register; this useful section has not been included in former years. A prudent and useful addition to this year's issue is the scheme for X ray and radium protection, revised by the International X Ray and Radium Protection Commission and adopted by the International Congress of Radiology in 1931. The memorandum of the Ministry of Health on precautions against shock from electro-medical apparatus is also reproduced.

The Year Book is edited by Mr. R. H. P. Orde and Mr. A. E. Ceadel for the Joint Red Cross Council and the British Hospitals Association; it is published by the Central Bureau of Hospital Information, 12, Grosvenor-crescent, London, S.W.1, price 10*s.*

A SURGEON IN THE WAR OF 1793

THE following account of the brief career of a military surgeon of 1793 is written from family papers by his nephew's grandson, himself a medical man.

On Dec. 22nd, 1793, Nicholas Avent, a Cornishman, received his commission from the Master General as Surgeon to the Ordnance at Toulon. Actually Toulon had been recaptured by the French on the 19th of the month, this being Bonaparte's first success in an important command, but the news had not reached Portsmouth, and he duly embarked there. On the ship putting in at Falmouth he was recalled and returned to Portsmouth by land.

He had evidently joined and sailed in a hurry, perhaps because he thought, as many Englishmen have since thought, that the war would only last a short time; alas, for him the war was indeed a short one. On his return to Portsmouth he drew up a letter to "the Board," claiming his expenses. He writes:—

> "being ordered abroad without having received my medicine chest I was advised to purchase such surgical instruments and drugs as were deemed most indispensable, accordingly I provided myself with amputating and trepanning instruments which cost me £10: 10; tourniquette, some lancetts, lint, bark, opium, and emetic tartar to the amount of £4: 4: 6. Being sent on board without a bed I was absolutely necessitated to purchase one which cost me £2."

He also claimed £10 for messing, and "the usual sum allowed those going on foreign service for taking the field." The secretary to the Board replied, allowing his claim for the purchase of instruments and drugs, also granting his travelling expenses for his journey by land from Falmouth to Portsmouth, but disallowing his claim for messing, though no reason is given, and also for his bed, "as bedding has been issued to you from store." The letter goes on: "and with respect to your request for the allowance on taking the field, the Board command me further to acquaint you that the same cannot be complied with, as your orders to go as Surgeon to the Artillery at Toulon was (!) countermanded." It appears as if he stretched a point in the matter of his bed, but in the other matters the official attitude was probably thought very mean; his pay was only six shillings a day.

In April, 1794, he was ordered to Corsica, then being attacked by combined sea and land forces under Nelson and Stuart, afterwards the victor of Maida; it was here Nelson lost his eye. Corsica was subdued and annexed in June, so the surgeon can have seen but little fighting, and the "amputating and trepanning instruments" probably lay unused, but disease, as in so many campaigns, was deadlier than the enemy, and his "bark, opium, and emetic tartar" must have been little enough with which to treat the unfortunate fever cases.

The island was indeed a fever-ridden spot. Nelson himself wrote: "We have 1000 sick out of 2000, and the rest are no better than so many phantoms: myself, I am here a reed among the oaks: I have all the diseases there are, but there is not enough in my frame for them to fasten on." One shudders to think of the task of the doctor of those days under such conditions as existed in that British force; our surgeon himself fell a victim and died in August.

His brother officers held an auction of his effects, the proceeds, with a pathetic list, being sent home to his next-of-kin in Cornwall; this list, signed by two captains and a lieutenant of artillery, shows some quaint spelling, e.g., "1 pr. silver shoe and nea buckles," "1 Cloas bagg," and "1 counter pain." Eight doubloons and three Tuscan crowns fetched £29 11*s.* in cash. "Fishing tackle" seems to imply some relaxation from his arduous duties, but his library was that of a man of learning in various directions, including as it did "Virgil in Latin," "Botany in Latin," "Russian Grammar," "Italian Dictionary," "History of Corsica," with the "Edinbrough Pharmacopœia in Latin" and "Bergmann on Elective Attractions."

Corsica was evacuated after two years of rather feeble and unprofitable occupation by the British; many hundreds of sailors and soldiers were left behind in their graves, including our surgeon of artillery. His relatives erected a monument to his memory in the little church at St. Veep, a tiny hamlet on the Fowey river, his native place.

Births, Marriages, and Deaths

BIRTHS

CROFT.—On Oct. 3rd, at Nelson-gardens, *Devonport*, the wife of Dr. C. R. Croft, of a son.

DEATHS

BLAIKIE.—On Oct. 5th, at Greenbank-road, Edinburgh, Robert Henry Blaikie, M.D., F.R.C.S.E.

HELME.—On Oct. [illegible] [illegible]mere, George Edgar Helme, [illegible] 66th year.

SALISBURY.—On O[illegible] [illegible]lepark-road, Kingstown, I[illegible], [illegible] L.R.C.P., M.R.C.S., D.P.H., aged 67.

TOTHILL.—On Oct. 7th, at Fredoli, Staines, Frederick Charles Tothill, M.B., D.P.H., aged 71.

WILSON.—On Oct. 2nd, at Eden Mount, Carlisle, George John Wilson, M.A., M.D. (late of Plymouth), aged 77.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

CLINICAL SCIENCE*

By Sir Thomas Lewis, C.B.E., M.D.,
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All in this College know that William Harvey discovered the circulation of the blood. But the movement of blood through the lungs had already been suggested by his predecessors. Harvey discovered the systemic circulation, and realised that this and the pulmonary circulation are but integral parts of one continuous movement. When it is asked what we owe to Harvey this forms the almost constant answer. Yet I venture to state that it is not the achievement which should chiefly be acclaimed, or that it should not be acclaimed in this form. There is little doubt that Harvey's discovery could not long have been delayed. Other workers had come very near to suspecting the fact; with the microscope once introduced it could not remain concealed. How and when the first clear statement would have come, had Harvey remained silent, would be a matter of profitless conjecture. It actually came from Harvey, and we are content to rest on that fact. Revolutionary as was his discovery in its time, far-reaching in its subsequent developments, yet the conclusion was not the best that Harvey gave us. The outstanding quality of Harvey's work lies in his statement of a case, in the lucid nature of his argument, and the finality of his proof. He presents to us a train of methodical and exact observation and experiment, carried forward hand in hand with close and finished reasoning, brilliant for its simplicity and for its power of conviction. His book is a romantic example of scientific exposition, unsurpassed at his time and since his time. *De Motu Cordis* holds its reader entranced, while each stretch of the path brings a surer promise of the approaching vista; and when the path ends it ends on the hill-top, and there is unfolded to our gaze a land that is ours with certainty—ours for all time. This culmination brings with it a sense of security and accomplishment that fills us with profound and lasting emotion; and we go forward to hold what he has given us with a great thankfulness to this pioneer, who has not only led us to a new country, but has inspired us and taught us how farther to explore.

Harvey has been termed the Father of Physiology: he was much more than that, for his child was Clinical Science, out of which physiology and pathology were afterwards born. Prompted and inspired by clinical observation and by dissections of the dead body, he proceeded farther by the method of experiment, using both man and animals, and harvesting and binding into one whole his abundant evidences. He bequeathed his method to us in his immortal book.

Since his time knowledge has grown apace, and where there was one science there have sprung up many. Clinicians in the age following Harvey became largely absorbed in the description of disease; in the hands of men like Sydenham this fascinating branch of knowledge, derived from observation, rapidly expanded. Though prosecuted sporadically in this country amongst physicians, Harvey's method fell amongst them into relative disuse; until during the last century, being relegated, it was seized upon enthusiastically by a small band of devotees and shortly became the basis of the present science of physiology. The budding off of physiology is almost within memory. The process of disruption has continued. First physiology abandoned medicine, and in going took largely from medicine its function of studying the normal processes of the body; it also took something more important, for clinical medicine seemed to relax its claim to the use of the experimental method, which it had forged and which physiology, its offspring, now chose as its own chief weapon. Pathology has budded or is budding off, assuming for its part the study of the mechanism of disease, human or otherwise, and in almost all its aspects. This disruption of medicine, as it was originally constituted and as Harvey knew it, may be the inevitable outcome of its growth, may profit physiology, may profit general pathology, may even profit the medical sciences when these are viewed as one whole; but it is a process which can be carried too far, and it then becomes, is becoming, detrimental to the development of the clinical branches of work.

It is necessary for medicine, still the parent and still largely possessed of guiding authority, to call a check to this subdivision of her estate. It is necessary that steps should be retraced and that territory originally possessed should firmly be reclaimed, so that medicine should not be narrowly confined; it is requisite that medicine should renew its strength to wield its chief weapon, the experimental method. It is to the accomplishment of these ends that the establishment of Clinical Science in its full scope is to be regarded as so important. But if this science is to become established it must not be formed into a third unit, which shall presently detach itself and move off to a position of isolation; it must remain firmly within and develop as an integral part of the whole organisation. And to secure this most desirable and permanent unity it must establish itself, not in laboratories of our medical schools but actually within our hospitals, centring upon the wards and out-patient department, and using laboratories merely as adjuncts and storehouses of necessary equipment. Above all, we must guard ourselves against the obsession, tending to grow up in recent years, that useful discoveries are purely the prerogative of laboratories.

The General Scope of Clinical Science

The proper practice of medicine has been built up, and continues to be built up, on a complex basis. The general mass of our knowledge rests upon a tripod, the three limbs of which are each essential to the stability of the superstructure; these limbs are: studies of living men in health and disease; studies of dead men; and correlated studies undertaken upon the lower animals.

The full scope of Clinical Science, as the work of Harvey first defined it, embraces all these three. The central and unique studies of Clinical Science, most fundamental of all studies pertaining to the practice of medicine, are those which deal with living men. But these cannot be divorced either from anatomy or from experimental work on animals without embarrassing all three, and without seriously weakening the whole edifice.

It is quite necessary to the proper progress of the clinical branches of study that they should be most strongly linked with physiology, with morbid anatomy, and with what has been called experimental pathology. The linkage can be an enduring one only if Clinical Science continues to command opportunities of studying both dead bodies and living animals.

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* The Harveian Oration delivered before the Royal College of Physicians of London on Oct. 18th, 1933.

It is essential that those who have held charge of patients and have studied phenomena in the living should themselves, and not through skilled deputies, explore the tissue changes which may underlie disturbed function; for while the skilled deputy may more accurately describe and name those changes in the tissues upon which he chances, he cannot enjoy either full opportunity or the full inspiration to correlate function and structure. It is by these correlations that the meanings of many manifestations during life are explained; it is by correlation rather than by simple study of the cadaver that the meaning of illness and the cause of death are often or usually to be explained.

It is essential that those who in studying human patients perceive opportunities of putting questions to the test of animal experimentation should themselves engage in such work; that correlation should not be left to the chance meeting and union of clinical and laboratory studies; that the spirit which moved the original inquiry should live, vitalising and directing the whole work in its progress along a broad path towards a practical goal. To divide or attempt to divide medical research into ward research and laboratory research is narrow and mischievous; it is a profound error to believe that there is any essential difference in general method, however different may be the technique.

The physicians and surgeons of our great teaching hospitals become more and more dependent upon technical experts. How easy, as the problems suggest themselves at the bedside, to accept the view that it is fitting that these highly trained and fully equipped men should undertake the investigation. But the result, so often, is that from the first the research is forced into a narrow channel of technicality from which it fails to emerge, and the work ends in one of those reports which, scientific though they may be in their cold logic, unfold no story and remain uninspiring and lifeless. The fascination and importance of the problem in its wider and practical implications have been concealed, the inspiration that should drive to its solution has been lost, because the problem is no longer seen in its full perspective, a problem primarily concerning the living, in part concerning the dead, and in part deriving from the laboratory. It is just this integration that is of so much consequence to the vitality of medical research; and this integration is, and always must remain, chiefly within the special province of Clinical Science. As there has been occasion to state previously,[1] knowledge that is applied usefully to the health of mankind will almost always come by a series of steps, the first of which is the recognition of the human need, the last of which is the application of a test directly to the human problem. It is therefore in the nature of things, however many steps may intervene, that the first and last shall be clinical. He who can see the source of the problem, who can appreciate the fittingness of its final solution, is uniquely fitted to guide the whole train of thought and of inquiry.

Harvey investigated the human body in health and disease, living and dead, and used animal experimentation to supplement his other studies. This is our birthright, derived from him, and we must not depute our proper tasks. A great need of the medical sciences in the present stage of their development and inter-relation is a group of men, primarily clinicians, but fully accustomed by training and by daily experience to wrestle with scientific problems; men who, in place of relatively complete and accurate knowledge of some purely laboratory science, hold as the first part of their equipment intimate acquaintance with the relevant diseases as these are seen in living men, who have also acquired sufficient knowledge of related physiology and of general pathology, who have the aptitude to acquire quickly and well the necessary technical knowledge and skill, thus to enable them to grapple with the problem both in its detail and in its wide aspects, and to drive successfully to a practical goal.

But such work, it will be clear, requires not only ability, but it requires a man's full energy; it is not the type of work to which those busily engaged in practice can give themselves in leisure hours with full prospect of success. Physicians do not now live as Harvey did in times of easy clinical activity, but in days of much heavier and more complex routine. So if the purpose in mind is to be brought to accomplishment it will be necessary to set free men having aptitude for the work outlined, to form a phalanx of trained clinicians who shall bring Clinical Science to a new pitch of scientific efficiency and hold it there.

From this statement of the general scope of Clinical Science and its aspirations we pass on to survey, not exhaustively but selectively, certain studies upon which Clinical Science may profitably engage.

Directions of Investigation

STUDIES OF THE DISEASE

Description and definition of disease.—Coming down to us in part from remote times, chiefly from the great clinicians of the seventeenth and especially the eighteenth and nineteenth centuries, is this tradition, the discovery of new disease, consisting of the separate description and naming of recognisable diseases. This recognition of separate diseases originally based itself upon close resemblance between manifestations of ill-health in separate people, with or without the additional evidence of a common morbid lesion. At first such discovery was a matter of relatively simple observation, as was the identification of biological species; but it would very naturally become less simple as those of most constant form were eliminated, and the number of those to be recognised consequently diminished. While requiring freshness of sight and mind, so that the opportunity might be seized when it occurred, nevertheless progressive work of this kind has been and must continue to be a matter largely of good fortune, as when several patients of one type present themselves for examination in quick succession. To-day work along these lines could not be a planned investigation; it has become incidental to a long routine directed to other purposes. There may be many forms of disease yet to describe, but it is manifest that most diseases of simple types have been named; there is evidently work still to do in recognising the less obvious types. Moreover, there is very important new work to do, if one may express the matter a little differently but more clearly, in *defining* conditions of disease. This defining, which is no more than accurate naming, is quite fundamental to many studies that must be undertaken in the future. The very attempt to define often fires a dormant spark of inquiry. This method of working towards precise definitions, and ultimately from them, is both instructive and prolific; it leads to the belief that diseases are named much too often upon a simple and perhaps loose grouping of symptoms, and that closer analysis of mechanism will lead in the future to much revision of terms. Definitions cannot be made satisfactorily in terms of grouped symptoms; definition brings us quickly to intimate questions of causation. When it comes ultimately, as it comes inevitably, to questions of causation, then it is found, as the history of medicine abundantly illustrates, that on the one hand distinct diseases have superficial resemblances, bringing them to be confused, and that on the other hand conditions thought to be quite unconnected have proved to have a common pathological basis. Instances of both kinds of reshuffling will no doubt often occur again. As our understanding of disease is incomplete, so, and in that measure, our classification remains artificial and lacking in finality. There are, in fact, few clear-cut discoveries relating to the mechanism of disease which have not called for some change of nomenclature; there are probably none that do not render close revision of parts of it advisable. While the progress of nomenclature directly and importantly affects investigation of mechanism, the latter often affects the former. There is an interplay between the two; they should move forward together; in investigation the nomenclature of disease, until based firmly on cause, should usually be regarded as unstable. Briefly there are two points to realise. Firstly, that the useful nomenclature of disease is becoming less a matter of simple and casual observation, and more and more dependent upon a close understanding of the mechanism of disease, and therefore upon concentrated and intensive study. Secondly, that the attempt to reach accuracy of definition is itself a strong stimulus and powerful guide to investigational work.

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[1] Brit. Med. Jour., 1932, ii., 1046.

Search for cause.—There is no special method of investigating the cause of disease; knowledge of cause may be derived from one of many sources. The disease may prove to be hereditary; it may be acquired. The ultimate cause may become revealed after a characteristic group of symptoms is seen to be associated with some definite morbid change. It may be found to result from a specific bacterium or protozoon, from a fault in diet, from contagion, or from exposure to a poisonous environment. Causation has far more aspects than can be dealt with here. But one point of view peculiarly relevant to this discourse may be considered. Although it is manifest that the cause of disease may be found by bacteriological, protozoological, dietetic, or epidemiological study, it is also manifest that such studies depend for success upon relevant clinical discoveries. The cause of human disease never has been, and never can be, found purely within the walls of a laboratory; there must be at least some association, direct or indirect, with patients. This association has grown, especially in the case of bacteriology, to be too loose; it is quite necessary to the proper study of many diseases that the association should develop the intimacy which has proved so successful in investigation of tropical disease. Let us remember that Lister was his own bacteriologist. The solution is not usually to be found in what has been termed team-work. Can it not be hoped that skilled clinicians will be found in this country who will devote their lives in studying the origin of disease, and who will fit themselves by special and appropriate training for this particular task; or is reliance still to be placed on casual contacts between pure clinicians and specialists in laboratory technique or pathological method?

Studying the course of disease.—Apart from those diseases which run short courses to death or to recovery, work of this kind can be undertaken satisfactorily only by those in long-continued contact with given patients; it is essentially work for the coöperation of the family doctor. Whether the course of the disease studied is modified by treatment or not, these investigations are fundamental to prognosis. Sound prognosis bases itself wholly and inevitably upon experience, a statement which needs emphasis. Much further information than we possess has still to be obtained, even in so far as relatively simple conditions of disease are concerned. Where close definition of disease is impossible, where in arriving at a prognosis several factors must be considered, the precise significance of the different factors has usually been insufficiently analysed. It is often work of a most tedious kind, and involves highly critical and sound statistical treatment. A most notable, I would say unique, example of such work is that carried out over a ten-year period upon 1000 cases of chronic heart disease by Dr. Ronald Grant. His contribution will form the basis of sound prognosis in cases of this kind for very many years to come; I point to it for this reason, but especially because it is an illustration of scientific method in establishing prognosis.

Therapeutics.—The basis of all new treatment is, and always will be, critical experiment. Therapeutics is a purely experimental science, and its methods should, but unhappily do not, always correspond. There are a few drugs, such as thyroxine and insulin, mercury and iron, digitoxin and morphine, the beneficial effects of which, when given to appropriate patients, are so rapid and so obvious that they are universally acclaimed as sovereign remedies. For the rest, a large proportion of the drugs in daily use are without scientific sanction, and no attempt has been made or is being made to obtain this sanction for them. There are many forms of treatment—electrical, balneological, and I would also add surgical—to which the last statement equally applies. Let me not be misunderstood. I do not mean that they are unsupported by a train of academic reasoning. There is, in my view, only one good reason why a remedy should continue to be used—namely, that it has been found to be of service; this standpoint is empirical, but that does not prevent it being fully scientific. Neither do I mean, in saying that many remedies are without scientific sanction, that they are useless, but that there is no properly recorded evidence of their usefulness. One of the more obvious tasks of clinical science is to compile clean and readily available records of properly controlled observations proving the effects of such remedies. It seems unbelievable that the profession can long continue tolerant of a system under which drugs and other remedial measures are vaunted on an inadequate basis of recorded experience, or that doctors should be almost forced by popular clamour to give and to transfer allegiance, an allegiance stimulated by report of advertisement and not by proved worth, temporarily to this remedy or to that. It is not through easy, but often fallacious, general impressions that full progress is to be expected, but mainly through deliberate, unbiased, and untiring study of the reactions of patients to given remedies. It is the duty of clinical science, in this branch of its activity, to maintain close linkage with pharmacology; but it is equally its duty clearly to recognise that, in so far as both manner and intensity are concerned, the action of a drug on man is not necessarily the same as the action on an animal, and that the action on the diseased is not necessarily the same as on the healthy man. The proof or disproof of a drug's efficacy rests finally on the test in patients.

We have been dealing with methods in which the disease itself is the focal point of study; the isolation and recognition of entities, the inquiry into the cause, course, and treatment of disease. There are other important forms of investigation.

STUDY OF SPECIAL MANIFESTATIONS OF DISEASE

A very profitable line of study is that which inquires into separate but various manifestations of disease, whether these are subjective or objective.

The study of subjective symptoms has a unique practical value in that it relates to manifestations directly affecting the patient's welfare; these manifestations of ill-health must be dealt with whether we know the cause of the disease producing them or not. But the study of subjective symptoms and other phenomena has a much wider importance, because it frequently throws a flood of light upon the processes and nature of disease, leading up to closer definition and to more intimate understanding. It was inquiry into the meaning of the symptom "palpitation" and to a closely related phenomenon common to many different diseases—namely, irregular heart action—which led to the volume of productive work upon the mechanism of the heart-beat. And it is to be particularly emphasised that that work comprised not only studies of the disordered heart-beat, but of the normal heart-beat as well. Since symptoms, using the word in its broad sense, may usually be regarded in terms of disturbed function, the study of symptoms necessitates very close consideration of the relevant mechanism of the body while this is working naturally. The study of symptoms, therefore, is the branch of clinical science which links it most closely with physiology, and stimulates physiology to many of its most important new ventures. For the study of symptoms, when productive, always expands the corresponding branch of physiology. It is a notable fact that, in beginning to study a symptom, physiological information sufficiently complete to form a proper basis for the analysis of that symptom is very rarely available; often it is extraordinarily meagre. It must be sought in part or in whole before the symptoms can be studied. These preliminary studies fall usually to the clinician himself, for he alone is likely to realise the precise information required, and also the importance of acquiring it. No one can work rationally upon the mechanism of symptoms who is not primarily a clinician, and who does not become in his chosen field a physiologist also. There is no branch of medicine, if we class disease anatomically, which does not profusely illustrate this fact. The work of neurologists and their fundamental contributions to our knowledge of the normal function of the central nervous system is no isolated instance, but it will spring at once to the minds of all.

Transient phenomena.—It is frequent for a patient to complain of some symptom, or for some phenomenon to be observed in him, that is not continuous but transient. Such phenomena cannot be studied too closely; they are most instructive and their investigation most fruitful. The transient phenomenon may consist originally of some relatively simple change, followed, maybe, by profound secondary disturbances. A very notable example of this kind is the paroxysm of tachycardia, a sudden increase in the rate of the heart-beat to perhaps double or more than double its original level. These paroxysms come and go, and they allow us to study to perfection the effects of change in the rate of its beating upon the heart, normal or afflicted by disease. It is almost as though we were able to turn a rapid series of rhythmic shocks suddenly into the auricle and to study the result at will; but it is actually done for us in the unanæsthetised subject, and without disturbance of chest wall or other structure. Sometimes the effects are profound. Within a brief period of the onset the subject presents the full signs of heart failure with congestion; a few hours later he presents none, the heart often returning at once to its normal size. In such cases the unique and recurring opportunity is presented of studying in its many aspects the manner in which heart failure develops. It is perhaps the most important experiment upon the heart which nature repeats before our eyes. You may study heart failure by comparing normal subjects with those who show failure. It is not the same thing; it is the chance of minutely comparing the normal and abnormal states of circulation *in one and the same subject* that is so important; here is the perfect control. You compare the one and the other state within a short time period; you can repeat and check your observations or modify your method of observation.

Provocation of symptoms.—Symptoms are often transient, occurring under particular conditions that are related by the patient. From the standpoint of investigation it does not suffice to accept these statements; the patients should come under observation while the symptom is being provoked. In instances where the symptom is transient and oft recurring it is justifiable to ask the subject of it to undertake such an act as ordinarily provokes the symptom; but when this is done it must be under carefully controlled conditions, with a view to discovering any phenomena that are simultaneously displayed by the patient, and how these associated manifestations and the symptom itself are changed by varying the conditions of observation. There could be no better illustration of this highly valuable method of clinical work than recent observations upon intermittent claudication and angina pectoris. The two conditions have a closely allied pathology. For nearly a century and a half attacks of angina have been recorded; but it is only recently that we are really beginning to understand them. And this understanding comes from careful study of actual changes of pulse-rate and blood pressure occurring during the attacks, and from studying by controlling them the factors involved in producing the attack, and correlating these with the corresponding observations on claudication. Many recent instances of productive work of this kind, enjoying as it does the full advantages of the experimental method, might be cited. It promises to develop into a fertile branch of clinical science; for while bringing us into much closer contact with disturbed mechanisms, it has the power to unveil essential factors relating to the cause of the disease studied.

Systematic observation.—This very important method of work has still a great future. In its simplest form it investigates all the circumstances in which a given phenomenon appears, and endeavours to find an invariable correlating factor. In the case of a symptom, such as headache, it leads to clearer definition of the immediate cause of that symptom. In other instances it displays unmistakably the effects of a manifestation, such as high blood pressure, common to several diseases. It may also teach how a given phenomenon is affected when circumstances vary spontaneously, then acquiring much of the power of the experimental method.

THE APPEAL TO LOWER ANIMALS

In a brief survey it is unnecessary to do more than touch upon the obvious opportunities presented by studying the effects of simple injuries, especially of wounds. The historical example of the wound in St. Martin's stomach of which surgeon Beaumont brilliantly took advantage is a sufficient illustration of its fertility. In the same connexion may be mentioned the equally fertile opportunities provided by studying the effects of certain surgical interventions, as in the well-known instance of the thyroid gland. I will not dwell upon the special opportunities for observation that present themselves to surgeons during the progress of operations; such investigations as those concerning referred pain largely depend on this method, which, however, must remain purely incidental, and must always be conducted within strictly prudent bounds. Deliberate interference, other than trivial interference or interference undertaken wholly in the interest of the patient, is not to be considered. It is for this reason of humanity that we appeal to the lower animals, and on this question there is still something to be said.

The use of animals for experiment is the chief and rightly the most valued method of the physiologist; it is equally indispensable to several branches of pathology and to pharmacology. But here the use of animals will be discussed from a very limited point of view—namely, its direct application to Clinical Science. A method of studying human disease, advocated since Claude Bernard's time, is first to reproduce such disease in a lower animal and then to proceed to investigate it in that animal. In theory ideal, in practice this is rarely possible of full accomplishment. Strictly speaking you cannot by cutting or tying operations reproduce any human disease other than one arising out of injury. It is possible to produce disease closely akin to that seen in man by introducing into animals the original agent of the human disease, bacterial or otherwise, or by withdrawing some essential from the diet; but because the animal and its reactions are different, the disease is not accurately reproduced. The great value of animal experimentation in clinical science—putting on one side the indirect and great contributions of physiological experimentation—lies in a different direction. Disease destroys certain organs or interferes with the functions of certain structures, giving rise to specific manifestations; these *manifestations* of disease may often be reproduced in animals. If we can be sure of accurate reproduction then their meaning and consequences in man may often be elucidated by further study. If by some interference we can occasion high blood pressure in a dog we have not reproduced the disease "essential hypertension," and there may be no justification for supposing that the two states have anything in common beyond high pressure; we can learn much, however, of the effects of high blood pressure by this method. To entertain the belief that disease has been reproduced because one of its manifestations has been caused to appear is to fall into an easy but serious fallacy. A little thought will show the full significance of this statement and will bring the supreme importance of clinical research fully into view. When we investigate clinically some disease, or some manifestation of it, we may be seriously handicapped by circumstance; but we are possessed of the certain knowledge that what we study is precisely what we set out to study. That is a tremendous asset. The complete assurance is never enjoyed in studying an artificial phenomenon.

Status of Clinical Science

Clinical Science should lead the medical sciences of the future as it led in the past. It can do so by waking to full consciousness of its powers and responsibilities. There are many directions in which physiology and animal pathology are fundamental to the study of human pathology; Clinical Science, which includes human pathology, is fundamental to the proper pursuit of the healing arts. In this direction it has direct powers of which the remaining medical sciences very rarely become possessed. Because of its immediate and constant bearing upon the health of the people it is the most responsible medical science. But it will be clear that if it is to take its rightful place in our community then it must acquire full opportunities so that it may be conducted, as are the other sciences, with the freedom of movement essential to vitality, being unhampered by collateral preoccupations and opportunisms. It must be conducted with that rigid adherence to truth that takes no heed of consequences. It must seek knowledge for its own sake, and be allowed to develop its own lines of progress. It must be judged, and its devotees must be rewarded upon a new basis—namely, the weight of contribution to actual knowledge and to philosophic thought, without reference to the immediate practical result. This high status cannot be won for Clinical Science by the efforts of practising physicians and surgeons, however brilliant and unselfish their efforts may be; for these can be no more than occasional acts intermingled with very different activities, and the movement to be successful calls for concentrated purpose and sustained work over periods of many years. I am profoundly convinced that a movement such as is outlined is essential to the future safety of medical science, and am equally convinced that it can be accomplished without unusual difficulties by young and able men who can see the opportunities presented to their generation and are prepared to give themselves whole-heartedly to the fulfilment of this great purpose.

Briefly, Clinical Science to develop fully must become possessed of the traditional intellectual liberty of other sciences. It requires only that the simplicity and truthfulness of this ideal should be understood and its implications realised for Clinical Science to come soon into its own. Appointments to full-time service in medicine must be based neither on professional experience, nor upon capacity in teaching, nor upon simple erudition, but primarily upon distinction in the organisation and accomplishment of work in Clinical Science. The focus of academic medicine must not be allowed to become the teaching of masses of students for professional objects; the focus must be the fostering of pure learning; and the main work of the day must consist of search and research, of the sifting of sound views from unsound views, of an impartial weighing and recording of evidence. Academic medicine must not be driven to a merely technical end-point, but must assume the full dignities and responsibilities that belong to a great and progressive branch of knowledge.

There are questions which concern the elucidation of disease and its processes in man which are among the hardest that human intelligence and endeavour have to answer. Clinical Science especially requires, for the solution of its many and varied problems, men of first-rate ability. To the younger generation the opportunities now offering, the security that is assured, are of a kind undreamt of a few years ago. The days are passing when a worker was inevitably forced away from the work of his choice to find his livelihood in practice. The time is approaching very nearly to us when it will be impossible for men spending long years in the successful solution of problems in Clinical Science to fail to draw around them at least a few eager young workers from their own teaching institutions; when it will be impossible for them to remain isolated intellectually, and surrounded only by students preoccupied by more directly practical pursuits and interests.

Here and earlier it has been urged that the work of Clinical Science requires for its highest development men who devote their thoughts and labours to the investigation of human disease as a life work. To bring into existence a group of such workers is the need, and in my view the opportunity, of to-day. But while impelled at the moment to this advocacy, I am not unmindful of the great work of practising physicians and surgeons in the past or of the contributions of young, able men whose ultimate destination is practice. Upon such work the growth of Clinical Science has till now depended and must continue largely to depend. The contention is that such work is not by itself adequate to keep Clinical Science abreast in the team of allied medical sciences.

The Recent Growth of Opportunity

Medicine, like the world generally, is passing through times of change, of critical readjustment to the spirit of our age. In the days before the war no man could pursue Clinical Science as his sole aim and live. There were a very few scholarships to help an occasional student to linger for a few years, but no more, before taking the plunge into practice. There were a very few sources from which small grants might be obtained to cover barely, or in part, expenses incurred in work. The first sign of real change came from a generous and far-seeing private donor, Sir Otto Beit, who in the year 1909 endowed a Trust of nearly a quarter of a million pounds for the maintenance of a large group of three-year Fellowships. The Fellows first appointed had barely completed their term of work when the movement for the encouragement of research in medicine became greatly enhanced by the allotment of public funds under the control of the Medical Research Committee (now the Medical Research Council). This council has the power, and has repeatedly stated its eagerness, to establish units of clinical research in this country, paying adequate salaries and defraying all reasonable expenses. Since its inauguration it has gladly welcomed the chance to finance all reasonably promising schemes of clinical research submitted to it. Its influence upon medicine in this country has been an ever-growing one, not only because of the increasing importance and volume of the work done under its guidance, not only because its resources, financial and otherwise, have increased, but for a further reason, which is perhaps the most important of all. Within a short time of its institution, and remarkably, it established in the minds of those working under it a feeling of security that they were free to pursue their work without other cares. Workers under this council have enjoyed an unusual measure of freedom from direction and from restraint, and a sense that both their present and their future interests are closely guarded for them. When the war was over the educational authorities began to take a part in this progressive movement, and there became established in London alone a number of professorial chairs in medicine, surgery, and gynæcology, with establishments that now provide full-time work for a much larger number of junior workers. Other benefactors have begun to found additional senior posts specifically intended for the prosecution of research in Clinical Science within the wards and laboratories of hospitals. One of the first of these was the permanent endowment by the Rockefeller Foundation of such a post at University College Hospital. It is being followed by the creation of a similar post by the Beit Memorial Trust. The Medical Research Council has established a neurological unit of a similar kind at the National Hospital, Queen-square. I would ask you not to forget that two Foulerton professorships have been established by the Royal Society in recent years, under a bequest "for original research in medicine for the discovery of disease, the causes of it, and the relief therefrom of human suffering," stipulations which clearly open these posts to purely clinical candidates possessing appropriate qualities. The instances given are by no means exhaustive; but enough has been said to show how profoundly the position has changed within the space of a few years, and how rapidly the movement is gathering force. It is most encouraging to see this College possessed of its own special research funds for the direct help of progressive work. The formation of a science committee within this College is another and important sign of a general trend of events, and of the awareness of the College of the spirit of these times. Apart from their potential importance such innovations can hardly fail to form important and necessary links between the more purely academic and the practical activities of our profession. It would be gratuitous for me, in speaking before this College, to dwell upon the importance of such linkage. Every pathway between those who have new knowledge to impart and those who can apply it must be maintained; and though it is necessary that investigators should enjoy that measure of seclusion which is necessary to the full development of their powers, it is vital to our profession that there should be no sharp distinctions, no subdivisions into a camp of investigators and a camp of doctors.

But of all the developments happening in recent times none is so important as the lively awakening and steadily growing interest among young and able men in the clinical field. This change in spirit and in intention has now been in progress for a sufficient time for us to be assured that it is not transient, but has behind it a fixed and deep enthusiasm based on gathered courage and confidence, which now can hardly fail to carry the movement forward to ultimate success. The activity and fruitful work of many new recruits has enabled the formation of a new society, now in the fourth year of its vigorous growth. The gatherings of the society, formed around a nucleus of full-time workers, but closely linked with the practising profession, are already notable for the original quality of the communications which it welcomes and informally but thoroughly discusses. Simultaneously, among those men, and they are now many, who are steadily pressing this movement forward, there has developed a spirit of mutual interest, help, and encouragement, founded upon a common purpose in work; there has come to clinical workers in the great schools a far closer community of feeling and of sympathy, not only with each other, but with workers in physiological, pathological, and other fields of scientific endeavour, connecting links of the utmost promise for the future. Clinical workers are beginning to acquire their share of that subtle atmosphere, which is common to university life, and is well recognised to exercise profound influences upon the spirit and method of work and of thought.

Concluding Remarks

A little more than 300 years ago the clinician Harvey, inspired by the desire to understand the motion of the heart, set himself to discover its meaning. He did not concentrate upon such of its motions as he might see in his patients; but starting from these, in his wisdom, let his gaze roam. He searched widely, gathering with his own hands and with his own brain all such information as he might find pertinent to the furtherance of his studies. It was because he possessed breadth of vision that he brought these studies to a conclusion that has proved fundamental to all medical science. In doing so he gave us an exposition of method of unique force and significance. He established for us a tradition, a tradition that Clinical Science shall not be confined narrowly or by artificial boundaries, but shall be free to search how and where it will: a tradition which will not countenance attempts to separate the study of health from that of disease, or the study of animals from that of man, or work at the bedside from that of laboratories. These are among the lessons of *De Motu Cordis*, and this is Harvey's leadership. As your chosen orator to his memory to-day I recall to you as Fellows and Members of this College his exhortation to search and study out the secrets of nature by way of experiment. I am moved to ask here and in his name that this College should allow its gaze to rest with earnest pride on this gift of Harvey's, the Clinical Science which he founded; that, visualising the special needs of this science under the strain of modern conditions, the College may offer full encouragement and sympathy to its appropriate development; I ask that it should couple Harvey's name particularly with this science so that it may stand to him in this College for his most lasting monument, and that it may form a bond within this College between those who live to gather knowledge and those who live to apply it to the needs of the sick, a bond bringing mutual affection and respect.

To you, Mr. President, I desire to express my humble thanks that you have afforded me opportunity of promulgating these ideas, at this time, in this place, and on this occasion. For in respect of time, the signs of its ripeness are abundant; in respect of place, this great College has for centuries formed a chief centre, not only within Great Britain but in the world at large, of progressive clinical thought; and in respect of occasion, we are here to offer tribute to the most illustrious son of this house, to him who gave us his noble example of the Science of a Clinician.

CLINICAL TESTS OF THE ANTIRACHITIC ACTIVITY OF CALCIFEROL[*]

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THE pure vitamin D in crystalline form was isolated simultaneously by workers in England, who gave it the name "calciferol," and by workers in Germany, who called it "vitamin D_2." The researches leading to its isolation, with the experimental proof of its antirachitic activity and the measurement of the intensity of this action, are recorded in the Medical Research Council's report on the vitamins (1932). The therapeutic action of calciferol was demonstrated by its effect on experimental rickets in rats, and quantitative determinations carried out on these animals, in comparison with the International Standard Preparation, showed that the pure substance has an activity of about 40,000 international units per milligramme, an ordinary good sample of cod-liver oil showing, in a similar quantitative test, an activity of about 100 units per gramme. It was important to know whether this experimental determination of the activity of calciferol in the accepted units would hold good also for the therapeutic action of the pure vitamin in the treatment of human rickets. The Therapeutic Trials Committee of the Medical Research Council accordingly invited me to carry out clinical trials on calciferol, and this report describes the result of these.

The calciferol was manufactured by the British Drug Houses Ltd., who supplied it as Radiostol, an oil solution containing 7·5 mg. of pure crystalline calciferol per 100 c.cm., equivalent to 3000 units per c.cm.

CHOICE OF SUITABLE CASES OF ACTIVE RICKETS

The investigation was started in February, 1932. From various sources young children with active rickets were collected. These were then subjected to a clinical and radiographic examination, and suitable cases were chosen and induced to attend at a special clinic. Care was taken to choose uncomplicated cases of active rickets free from nephritis, urinary infection, cœliac disease, and other chronic disorders likely to interfere with absorption and digestion. It was planned that the majority of these cases would be kept under observation and treatment as out-patients, so the choice of suitable cases was determined by two factors: (1) the radiographic evidence of active rickets at the radial and ulnar epiphyses of the right wrist; and (2) the fixed social and economic condition of the family from which the child came. This second factor involved careful inquiry into the income, housing, and dieting of the family; and by intimate questioning week by week or by house visiting when necessary, it was possible to confirm that there was no substantial variation in the basal diet of the children during the course of the investigation. Since all of the families were in receipt of poor-law relief, with only 10 to 20 shillings a week available for food for all the members, it would have been difficult for any important alteration or fluctuation in the diet or hygiene to have taken place without being discovered. To reduce the personal error to a minimum, all clinical examinations and taking of histories were carried out by myself week by week.

In this manner 44 children with active and radiologically proved rickets were taken under supervision—either as controls or for treatment. Of these 19 were rejected during the course of the investigation, either because it was reported by the mother that they had received gifts of food or because the fathers had found employment, under which circumstances it was assumed that the basal conditions of diet would alter and improve. Of the remaining 25 cases I was satisfied—as far as is possible in clinical observation—that the cases were suitable for my purpose.

Of these 25 cases, three were chosen, aged 11 months, 2½ and 5 years, to serve as a control standard of the optimal rate of cure. They were put under good hygienic conditions and given an adequate antirachitic diet containing milk, meat, liver, eggs, butter, and vegetables, with one ounce of cod-liver oil daily in two cases, and four tablets of radiostol (B.D.H.) daily in the other. Serial radiographic examinations of the wrists were made at weekly intervals, and the results of these were set up as a standard scale, described as " the scale of optimal cure," which was used as a basis of comparison during the investigation. Concurrently, 12 cases were kept under observation and supervision while remaining in their own homes receiving from 1 to 3 c.cm. daily of the oily solution of calciferol, but without any alteration in their diet so far as could reasonably be determined. These also were examined clinically and radiologically at regular intervals. This group included two cases of adolescent rickets: a boy aged 18 and a girl aged 13.

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[*] A report to the Therapeutic Trials Committee of the Medical Research Council.

As the investigation continued through the summer months and into the next winter, and some of the cases came first under observation at a time when automatic cure of the rickets might possibly have been taking place through exposure to sunlight, an attempt was made to control this factor by leaving a further eight cases for initial periods of from 5 to 19 weeks without antirachitic treatment. After this period of observation and control six of these were given calciferol, and any initiation of cure where none had previously been present or acceleration of it if it had already set was noted.

Two pairs of twins with active rickets were observed, one of each pair being used for control.

The remaining case was one which afforded a carefully controlled opportunity of observing the therapeutic effect of calciferol. The child of a negro mother and white father, with active rickets and no radiological evidence of healing, he was in bed indoors for 12 weeks, and it was possible by continuous supervision to be certain that he did not receive other than the diet on which he had developed rickets and which contained no vitamin D. In addition he was treated only with calciferol, and a series of weekly radiographic examinations of the rachitic wrist was made.

Throughout the investigation the degree of rickets in each case was estimated by means of radiographic examination of the right wrist, under a standard technique of radiography arranged by Dr. S. Whately Davidson. The estimation of the rate and degree of progress and cure was by observation of the changes in the serial radiographic pictures.

RADIOGRAPHIC SCALE OF OPTIMAL CURE

The radiological appearance of normal bones (Fig. 1) of active rickets, and the different stages of healing at the wrists are well known. When the disease is active the ends of the radius and ulnar are splayed; their edges are indefinite and lack density; the gap between the ends of the bones and their epiphyses, if they be present, is wider than normal (Fig. 2). By serial radiograms taken at weekly intervals it is possible to arrive at a standard scale of normal or optimal cure, noting the time required for the bones to reach specified stages in the healing process, and the time required for ultimate cure. This method does not allow of a directly quantitative expression of the healing process and of vitamin-D efficiency, as does the method used for rats as suggested by R. B. Bourdillon and his associates (Med. Research Council, Spec. Rep. Ser., No. 158, 1931), but it does give a clear indication of the presence or absence of a healing response to treatment, and of a comparative rate of cure. The most important stages of the healing process are: (1) the date of the appearance of the first healing line of calcification in the area of the osteoid tissue between the diaphysis and the epiphysis (Fig. 3); (2) the date of organisation of this line with the diaphysis (Fig. 4); (3) the date of the consolidation of the line with the diaphysis (Fig. 5). This may be considered the healed stage, although the density of the line of calcification will reveal that the bones have recently been actively rachitic.

The standard of the optimal rate of cure used in this investigation was reached by the observation of the three controls used for this purpose. The results in these confirmed previous observations of my own and other workers, and from these the following *standard of the optimal rate of cure* was set up:—

(1) The first healing line of calcification appears in the " osteoid zone " at 2 weeks and not later than 3 weeks.

(2) Organisation of this line with the diaphysis—i.e., the calcification of the gap between the first healing line

TABLE SHOWING WEEKS OF TREATMENT AND OBSERVATION

—	1	2	3	4	5	6	7	8	9	10	11	12	13	15
Optimal healing in controls	0	—	=	×	× ×	× ×	..	..	+	+ +	+ + +	+ + +	..	..
(1) 2 years, Feb., 2 c.cm. daily	0	?	=	× ×	× × ×	× × ×	..	..	+	..	+ + +	..	+ + +	..
(2) 2 years, Feb., 1 c.cm. daily	0	—	=	×	× × ×	× × ×	..	..	+	..	+ + +	..	+ + +	..
(3) 2 years, Feb., 2 c.cm. daily	0	—	=	=	× ×	× × ×	× × ×	..	+	+ + +	..	+ + +	..	..
(4) 1½ years, Feb., 1 c.cm. daily	0	..	=	×	× ×	× × ×	× × ×	..	+ +	+ +	+ + +	..	+ + +	..
(5) 3 years, March, 2 c.cm. daily	?	—	=	..	×	..	× × ×	..	..	+ +	..	+ + +	+ + +	..
(6) 5 years, March, 3 c.cm. daily	0	—	..	=	..	..	× × ×	..	..	+ + +	..	..	..	..
(7) 1 year, April, 1 c.cm. daily	..	..	=	..	× ×	× × ×	..	..	+ +	..	..	..	..	..
(8) 2 years, April, 1 c.cm. daily	0	0	..	—	=	..	..	× ×	..	..	+	+ + +	..	..
(9) 1½ years, April, 2 c.cm. daily	0	0	—	..	× ×	..	× × ×	..	+ +	..	..	..	..	..
(10) 2 years, Sept., 2 c.cm. daily	0	—	=	..	..	..	× ×	× × ×	..	..	..	..	+ + +	..
(11) 18 years, Feb., 3 c.cm. daily	0	=	=	..	..	..	..	..	..	..	+ + +	..	..	..
(12) 13 years, June, 2 c.cm. daily	0	..	=	=	..	× ×	..	..	..	+	..	..	+ + +	..
(13) 1½ yrs., March, 2 c.cm. for 14 days only	?	—	..	× ×	× × ×	× ×	..	*	..	*	..	..	..	*

In this table the symbols denote X ray examinations of the wrist and the degree of rickets or stage and degree of healing revealed thereby. The symbol 0 denotes active rickets without sign of healing; and =, the first healing line; ×, the organisation of this line with the diaphysis; and + the consolidation of this line in a dense line of calcification; the symbol + + + denotes the final degree of healing. The symbol * in Case 13 denotes unsatisfactory healing and relapse of rickets. The first column shows the age of the child, the month in which treatment was started, and the amount of calciferol solution given.

and the diaphysis—is visible at 4 weeks and not later than 5 weeks.

(3) The consolidation of the line with the diaphysis in a dense firm zone of calcification is visible at 9 weeks and not later than 12 weeks, and at this stage the width of the gap between the diaphysis and the epiphysis is normal.

The use of symbols — and = for the appearance of the first line, ×, × ×, and × × × for organisation, and +, ++, and +++ for consolidation, will serve to represent these in graphic form (see Table).

One important error may arise in interpreting the radiograms. The healing process of calcification, although described as a line, is in reality a circular rim of a plane surface. It is seen only as a line when this surface is photographed and viewed in one plane. An oblique view may give the appearance of two lines or of a line of lesser density than when viewed in one plane, and this may be misinterpreted as denoting a decrease in the density of calcification.

RESULTS OF CALCIFEROL IN FIRST GROUP

This group was made up of 12 children, 10 of them between the ages of 1 and 5 years, the remaining two being cases of adolescent rickets. They were all from poor and badly housed families, averaging three to a room. The typical diet was of bread, jam, margarine, tea, potatoes, and suet puddings, with a little meat once a week. At each attendance a specified dose of calciferol for each child was given in a bottle marked in such a way that the right dose could be accurately gauged. Four of these children were given 1 c.cm. (3000 units) of the calciferol solution daily, six of them 2 c.cm., two of them 3 c.cm. daily throughout the period of observation. The remaining case (No. 13) was given 2 c.cm. for 14 days and then the calciferol was replaced for the next 13 weeks by an inert "bottle of medicine" free from vitamin D. In five of the cases treatment was started in February at a season when there was little or no sunshine. The results are shown symbolically in the Table, and can be summarised as follows. In all the 12 cases which received calciferol continuously satisfactory healing of the rickets took place within 13 weeks—that is, at a rate and within a period equal to that of the optimal rate of healing of the control cases. In six of them there was an evident healing line within two weeks of commencing the calciferol period. In only one of the 12 cases was the appearance of the healing line delayed until the fourth week, but even in this case rapid healing continued, and at the twelfth week it reached the optimal healing stage.

The method did not permit of an accurate quantitative estimation of the comparative effects of different amounts of calciferol, but in three cases (Nos. 2, 4, and 7 in the Table) 1 c.cm. of the solution (3000 units) daily cured the rickets at an optimal rate, the first line of calcification appearing within three weeks, and complete healing with dense calcification within 11 weeks. The remaining case (No. 13), which received calciferol only for two weeks, showed a satisfactory healing line at two weeks. Under this impetus the healing process continued for a further six weeks—there was then some apparent retrogression—and at the fifteenth week active rickets was reappearing.

The two cases of adolescent rickets healed satisfactorily with calciferol. One of these was a boy, aged 18, who for some unaccountable reason had begun to develop evident rickets at the age of 15. Prior to that he had apparently been an active healthy boy. Two years earlier the enlargement of the epiphyses at the wrists had become visible, and difficulty in walking commenced. At the time he first came under treatment in February, 1932, he was severely affected and able to walk only with a slow waddling gait. To external examination there appeared to be gross active rickets with genu valgum. Radiograms confirmed this, with typical appearances at the radial and ulnar epiphyses without any trace of a healing line. The blood calcium was 8·9 mg. per 100 c.cm. of serum; phosphorus, 1·72 mg. per 100 c.cm. of plasma; blood-urea, 26 mg. per 100 c.cm. No albumin in the urine. There was no history of diarrhœa and no evidence of cœliac disease. The Wassermann reaction was negative. On inquiry his diet appeared to be satisfactory, but in spite of this the rickets was active and increasing. He was given 3 c.cm. of calciferol solution (9000 units) daily. Two weeks later a very definite healing line was present in the osteoid tissue beyond both the ulnar and the radius. In three weeks this was still more evident. He was then unable to attend the clinic until the eleventh week, but the calciferol was taken to him at home, and at the eleventh week there was almost complete healing of the optimal degree.

CASES RECEIVING NO CALCIFEROL

At various stages during the investigation eight cases were set aside at their first attendance to be kept under observation during a period when they received no calciferol or other vitamin D preparation. This was done to estimate and control the rate and degree of automatic healing which might take place, particularly during the summer months. The period of observation varied from 19 to 5 weeks in the individual cases. In some of these were signs of slight but slow healing, but this occurred only between the months of May and September, and in none of them did it take place at the optimal healing rate or at the rate of those treated with calciferol. Between the months of February and May, and again after October, the rachitic bones in this group of children showed no healing, and in one case there was an actual increase in the degree of rickets observed during November and December. When automatic healing did take place during the summer months it was in a different and less efficient manner than in the cases treated with calciferol. The initial healing processes in the osteoid tissue were in scattered points and did not appear in a definite line. Consolidation in a dense calcification was absent in all but one case. The healing process fluctuated and was not steadily progressive. In only one of these cases did the healing approach the standard rate of normal optimal healing and that was in a negro child, aged 4, who came under observation in the month of May.

The details of these cases are as follows:—

CASE A.—Aged 2½ years. Seen for 10 weeks from February to May without calciferol. On Feb. 22nd, 1932, active rickets; no healing. At 6 weeks rickets more marked; at 8 weeks doubtful evidence of healing process; at 10 weeks definite but slight evidence of healing, but not equal to that of the third week in the standard scale of optimal rate of cure.

CASE B.—Aged 3 years. Seen for 8 weeks from May to July without calciferol. On May 9th, 1932, florid active rickets, no healing. At 3 weeks no healing. At 5 weeks earliest evidence of slight healing; at 7 weeks no change; at 8 weeks healing progressing but not equal to that of the fourth week in the standard scale. No organisation or consolidation of healing calcifying centres.

CASE C.—A negro boy, aged 4. Seen for 9 weeks from May to July without calciferol. On May 18th, 1932, florid active rickets, no healing. At 3 weeks no healing; at 6 weeks healing evident; at 9 weeks definite and almost satisfactory healing, but line not as dense or consolidated as in standard scale.

CASE D.—A twin boy, aged 6. Seen for 19 weeks from June to October without calciferol. On June 9th, 1932, gross florid active rickets. At 2 weeks no healing; at 4 weeks earliest evidence of scattered healing; no line; at 5 weeks no change; at 7 weeks healing equal in degree to third week of standard scale; at 13 weeks still evident active rickets, but centres of healing in osteoid tissue without consolidation; at 16 weeks slow irregular healing; at 19 weeks rickets not yet healed, wavy slightly calcified outline to ends of bones—not equal to seventh week of standard scale of cure.

FIGS. 1 2 3 4 5

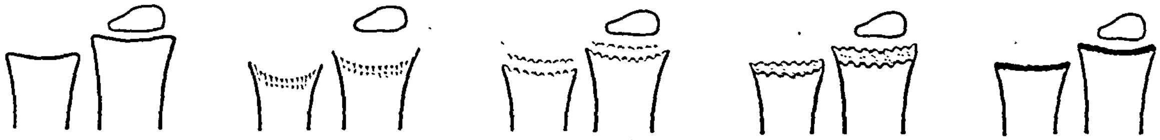


Diagram illustrating the stages of healing of rickets at the ends of radius and ulna in a two-year-old child. Fig. 1. Normal Fig. 2. Active rickets. Fig. 3. Appearance of first healing line in the osteoid zone between ends of bones and epiphyses Fig. 4. Organisation between the healing line and diaphyses. Fig. 5. Dense consolidation of the line with the diaphyses.

CASE E.—Aged 6, twin brother of Case D. Seen without calciferol for 5 weeks from June to July. At 5 weeks only slight evidence of inefficient healing, not equal to the second or third week of standard scale of cure. (Treated subsequently with calciferol.)

CASE F.—Aged 2½. Seen for 11 weeks from June to September without calciferol. On June 20th, 1932, active florid rickets. No healing in first 4 weeks. At 11 weeks rickets still active, but slight evidence of healing though not equivalent to third to fourth week of standard scale of cure.

CASE G.—Aged 4, a twin boy. Seen for 18 weeks from June to October without calciferol. On June 1st, 1932, gross florid rickets without healing. At 4 and 5 weeks slightest degree of early healing; at 8 weeks, healing progressing but less than at fifth week of standard scale; at 14 weeks rickets still active; at 16 and at 18 weeks slow, irregular calcification, but rickets not yet healed, equivalent to seventh week of standard scale.

CASE H.—Aged 2½. Seen for 5 weeks from November to December without calciferol. On Nov. 28th, 1932, florid active rickets, no healing. At 3 weeks rickets worse; at 5 weeks rickets worse, no healing.

In summary, the results in this control group of eight cases without calciferol or other vitamin D treatment were: In one case, a negro boy (C.), automatic healing took place in the months of May to July, at a rate almost equivalent to the standard optimal rate of cure; in one case (H.) seen for five weeks during the months of November and December there was absolutely no healing; in the remaining six cases, slow improvement took place between the months of May and September, but not at the standard optimal rate, and in two of these after 18 and 19 weeks their rickets was still active and uncured.

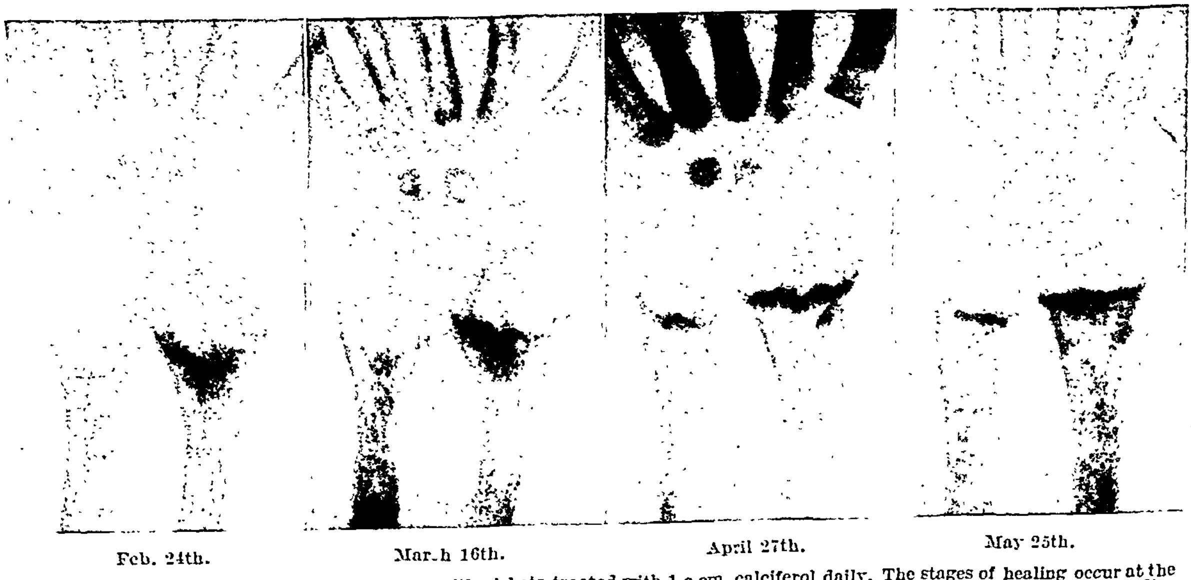
RICKETS IN TWO PAIRS OF IDENTICAL TWINS

Of two pairs of identical twin boys, one of each was treated with calciferol, the other without any extra source of vitamin D serving as control. One pair of these was Cases D. and E. of the preceding group.

They were aged 6 years, members of a family of 8 children and 2 parents living in a single basement room. Both had extremely severe florid rickets, with lateral bowing of the tibiæ and slow waddling gait. For an initial period of 5 weeks both were treated without calciferol and given a little extra calcium daily. For the next 14 weeks one twin (E.) was given 2 c.cm. of the calciferol solution daily; the other twin (D.) was given a "medicine" free from vitamin D.

At the onset on June 9th E. (the calciferol-treated twin) had blood calcium of 9·0 g., and blood phosphorus

FIGS. 6 7 8 9



Feb. 24th. March 16th. April 27th. May 25th.

Series of radiograms from a child, aged 2 years, with rickets treated with 1 c.cm. calciferol daily. The stages of healing occur at the same rate as in the standard scale of optimal cure. Fig. 6. Before treatment. Wide gap (osteoid zone) between shaft of radius and epiphysis. Fig. 7. After three weeks. Healing line visible in osteoid zone. Fig. 8. After nine weeks. Healing lines consolidating with shafts of bones. Fig. 9. After thirteen weeks.

3·2 mg. per 100 c.cm., with extreme rickets seen radiologically at the ulnar and radial epiphyses. During the initial 5 weeks without calciferol there was only very slight automatic healing (equal in both twins). From the sixth to the nineteenth week the boy took the calciferol daily. During this time cure took place at the optimal standard rate, and healing was complete at the nineteenth week—i.e., after 13 weeks of calciferol. On Oct. 11th (twelfth week of calciferol) blood calcium was 10·5 mg. and blood phosphorus 5·16 mg. per 100 c.cm.

The other twin (D.) was kept under observation for the whole period of 19 weeks without calciferol. On June 9th the blood calcium was 9·2 mg. and blood phosphorus 4·2 mg. per 100 c.cm. He showed very slight automatic healing during the initial period of 5 weeks, but at a slow rate and in an inefficient degree. At the nineteenth week his rickets was still uncured. On Oct. 11th blood calcium was 9·9 mg. and blood phosphorus 3·59 mg. per 100 c.cm.

In this pair of twins the radiological evidence showed that the calciferol (2 c.cm daily) produced satisfactory healing of the rickets at the optimal rate, compared with the exact control of his brother. The radiological evidence was confirmed by the blood calcium and phosphorus results in both cases, the ultimate levels being 10·5 mg. Ca. and 5·1 mg. P. in the calciferol-treated case, and 9·9 mg. Ca. and 3·59 mg. P. in the control case. It was confirmed again by the clinical condition of the children. The calciferol-treated child became more quickly active in his gait.

The other pair of twins were boys aged 4, who came under observation on June 1st with florid active rickets. One of them was treated from the outset with 3 c.cm. of calciferol solution daily. His rickets healed and cured at the optimal rate equivalent to the standard scale and other calciferol cases. No radiograms are available from the eighth to the sixteenth weeks, but at the eighth week there was firm consolidation of the healing line, and firmly healed at the sixteenth week. The other twin (not treated with calciferol) showed slow progressive automatic healing throughout the summer months, but this was not yet complete at the eighteenth week, when the degree of healing was equivalent only to that of the eighth to ninth week of healing of the standard scale of optimal rate of cure.

CASE ON CONTROLLED DIET AND CALCIFEROL

A half-caste boy, aged 2, came under observation on Feb. 4th. The family of five lived in one room. They lived on a typically rachitogenic diet. He had severe active rickets. He could not stand or walk. Radiograms showed an extreme degree of actively rachitic bones, with a very wide gap between the end of the radius and its epiphysis. From February to May he was kept under close observation in bed on a known diet consisting of bread, treacle, tea, sugar, and lemon juice to breakfast; cabbage, potato, one ounce of beef, bread, and treacle to dinner; bread, jam, apple, tea, and lemon juice to supper, and extra dry sweet biscuits at night; and treated with 2 c.cm. of the calciferol solution daily. It was possible to be certain from the close supervision which was maintained that his diet contained no known vitamin D other than the calciferol, and also that he was not exposed to sunlight. Serial radiograms showed that the calciferol produced active and rapid healing. After three weeks a healing line was visible in the osteoid zone. This was extremely well marked across the width of the bones ends in the fourth week, and was organising and consolidating in the fifth week. Healing continued, and at the eighth week the rate and degree of the calcification equalled that of the standard scale of optimal cure. After the eighth week progress was not so satisfactory as in cases treated on a combination of full diet with the vitamin D preparations and sunlight, the final healed stage being reached at 14 to 15 weeks instead of 9 to 12 weeks of the standard scale of optimal cure. The extremely poor diet probably accounted for this terminal delay.

This observation proved that 2 c.cm. of calciferol solution daily had a definite curative effect on the rickets of a child living on a vitamin-D deficient diet. The immediate calcifying effect was equal to that of a standard rate of cure produced by cod-liver oil or irradiated ergosterol.

CONCLUSIONS

Twelve actively rachitic children were treated with daily doses of calciferol for 11 weeks or more. The therapeutic effects were estimated by serial radiograms, comparing them with a standard scale of the optimal rate of cure. A control of eight rachitic children without calciferol was used to determine what spontaneous or automatic healing might have occurred had no calciferol been given.

The results in these 12 cases showed that calciferol had an active curative effect on the rickets, and that it produced healing at an optimal rate, acting as quickly and effectively as the usual therapeutic doses of cod-liver oil or irradiated ergosterol.

The results of the antirachitic activity of calciferol were confirmed by observations on two pairs of twins, one member of each being kept as control, and also on a child with an exactly controlled diet.

It has not been possible in this investigation to make an exact quantitative comparison between the therapeutic activity of calciferol and that of other vitamin D preparations, because daily doses of less than 1 c.cm. of the calciferol solution (3000 units) were not given. But it was shown that in four cases, two of which were treated from February to April, 1 c.cm of the calciferol solution daily produced a maximal curative effect.

Experience gained during the course of this investigation suggests that there are sufficient cases of human rickets in the big towns living under conditions which are suitable for comparative therapeutic tests of antirachitic substances. If such investigations were to be carried out it is advisable that the observations should be commenced between the months of November and January.

CLINICAL MANIFESTATIONS OF INTRACRANIAL ANEURYSMS *

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Intracranial aneurysms are by no means rare and a knowledge of their varied clinical manifestations is of considerable interest and practical importance. Some indication of their frequency is afforded by the fact that Beadles [1] in 1907 collected information from the literature relating to 555 cases, including 114 of his own. Fearnsides [2] studied the pathological records of the London Hospital between 1907 and 1913, and gave the following figures. In 5432 post-mortem examinations of the head, intracranial aneurysms were found in 44 cases (0·80 per cent.). In 7924 autopsies of all kinds the rupture of an

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* A paper read to the Newcastle and Northern Counties Medical Society.

intracranial aneurysm caused death in 0·44 per cent., while the deaths from intracranial hæmorrhage due to direct rupture of an artery amounted to 0·91 per cent. That is to say, there were nearly half as many deaths from ruptured aneurysm as from direct arterial hæmorrhage.

The great majority of these aneurysms occur in association with the larger arteries at the base of the brain, and in a proportion of cases their formation can be ascribed to the same ætiological factors as are responsible for aneurysms elsewhere. Thus syphilitic arteritis is an occasional though rare cause, and the lodgment of a septic embolus in ulcerative endocarditis occasionally leads to the formation of a cerebral aneurysm, as in the case of arteries in any part of the body. Non-syphilitic arterio-sclerosis is a commoner cause, and in such cases general evidence of arterio-sclerosis may be found in the blood pressure. In a large proportion of cases, however, no evidence can be found clinically or pathologically of any of these conditions, and the general belief is that the chief ætiological factor in such cases is a congenital defect of the muscular coat of the artery, through which a bulging of the outer and inner coats takes place; the defect seems most apt to occur where the artery gives off a branch, but this is not invariable and aneurysms may be found on the course of the vertebral, basilar, or other of the cerebral arteries.

Most of the aneurysms are very small, their size varying from a diameter of ¼ in. to that of a hazel-nut. These may be found intact if a search is made for them in routine post-mortem examinations in persons who have died from some extraneous cause and in whom no indications of intracranial disease have been observed during life. With this group we are not here concerned. Clinical manifestations arise under various conditions and may be conveniently considered in certain groups.

HISTORY

In the largest group the aneurysm gives no indication of its presence until it leaks or bursts. Intracranial aneurysm is one of the commonest causes of extracerebral or subarachnoid hæmorrhage. Such an accident may occur at any age, and while rupture is apparently rare in childhood many of the patients are adolescents, and the age-incidence is much lower on the average than that of the commoner intracerebral hæmorrhage. The clinical picture is produced by the sudden effusion of blood into the subarachnoid space, primarily and predominantly at the base of the brain, and the severity and duration of the symptoms depend upon the initial extent of the hæmorrhage and upon its arrest or continuance. The typical case is now comparatively familiar in the medical wards, and most house physicians have the opportunity of seeing one or two cases during their six months' service.

When a patient is brought under observation in a comatose state which has come on instantaneously and which persists for several hours, to terminate ultimately in death, the appearances are almost diagnostic of intracranial hæmorrhage. Such a picture occurring in an adolescent or young adult is highly suggestive of the rupture of an intracranial aneurysm, a cause which may be operative at any age. That this is one of the important causes of sudden death in young people is proved by the post-mortem records in this hospital, but except for this consideration the cases have little clinical interest.

More typically the patient is seized suddenly with a violent pain in the head, and may fall temporarily unconscious or become giddy; and frequently vomits. His condition creates much alarm, and he is removed to bed. There he lies, his mind usually somewhat confused, complaining bitterly of pain in the head and frequently continuing to vomit. A few hours later his appearance begins to resemble that of meningitis. The pain has located itself in the occipital region and down the spine, he tends to lie curled up, and is resentful of interference and of light. He shows a definite degree of neck rigidity, Kernig's sign is elicited, and frequently the deep reflexes are lost and the plantar responses are of extensor type. The presence of a definite degree of fever increases still further the resemblance to meningitis. This picture again is practically diagnostic of subarachnoid hæmorrhage—i.e., the acute onset and the subsequent meningeal irritation. Occasionally a further factor is obtained in the history which points still more precisely to this diagnosis—namely, the onset of the condition in association with some definite physical strain, such as straining at stool. The onset has also been ascribed to sunstroke.

Diagnosis, however, cannot be other than tentative until lumbar puncture has been done, when blood is found, usually copiously, in the cerebro-spinal fluid. This blood can be distinguished from blood accidentally introduced by lumbar puncture because when the fluid is allowed to stand the blood does not clot, and the supernatant fluid is diffusely pink or yellow. Blood introduced accidentally in lumbar puncture settles to the bottom of the tube, where it clots, and the upper layer of the fluid becomes clear.

CLINICAL FEATURES

The subsequent course of these cases is extremely variable, but they usually take several weeks to recover completely, and there is always the danger of recurrence of hæmorrhage with the reappearance of compression symptoms. The initial stage of confusion or unconsciousness is due to the sudden increase of intracranial pressure consequent upon the hæmorrhage, while the later stage, which may be prolonged, is due to the meningeal irritation set up by the absorbing blood. This leads to a great increase of secretion of cerebro-spinal fluid and severe headaches, which can be to a considerable extent relieved by lumbar puncture. It is, however, often a difficult matter to decide how often to do lumbar puncture, and in the early stages when bleeding is going on it should only be done, firstly, for diagnosis, and secondly, to prevent death from medullary compression, and at a later stage only sufficient should be taken off to relieve headache. Symonds[3] advises that the manometer should be used, and the pressure of the cerebro-spinal fluid not allowed to fall below 100 mm.

Certain additional clinical features are of much interest and diagnostic importance. A large amount of albumin is occasionally found in the urine immediately after the hæmorrhage; the explanation is uncertain, but Symonds accepts as probable the disturbance of nervous centres concerned with renal secretion (as in Claude Bernard's experiments on the floor of the fourth ventricle). Albuminuria, which is probably of a similar nature, has frequently been observed in apoplexy and accompanying an epileptic fit. Symonds adds, however, that the possibility of nephritis cannot be excluded in many cases in which albuminuria accompanies subarachnoid hæmorrhage.

Much commoner and of great diagnostic value is the appearance in association with subarachnoid hæmorrhage of large preretinal or subhyaloid hæmorrhages. These are undoubtedly due to the extension of blood along the arachnoid sheaths of the optic nerves, and the leaking of blood under pressure through the lamina cribosa. Papillœdema and retinal hæmorrhages may also occur if the increased intracranial pressure is sufficiently prolonged. Adie[4] notes the occasional appearance of herpes zoster in these cases.

Lastly, the mental symptoms which frequently accompany the prolonged convalescence of many of these cases are interesting and rather characteristic. A general failure of attention and memory is common, but the most remarkable mental picture is the Korsakow syndrome. This is identical with that seen in some cases of polyneuritis, especially alcoholic, and is characterised by a disorientation of place and time, and by organised delusions or false reminiscences upon which the patient enlarges freely. When stimulated by questions he will describe in detail journeys and events which he believes he has recently experienced.

This, then, is a summary of the clinical appearances, but I must stress that what I have been describing is the picture of spontaneous subarachnoid hæmorrhage, and that though such a picture is highly suggestive of the rupture of an aneurysm it is not diagnostic, as there are other causes of subarachnoid hæmorrhage. A diseased artery may rupture directly without aneurysmal formation, and this is comparatively common, while other occasional causes are hæmorrhage from a tumour which impinges upon the cortex or upon the ventricular wall and spontaneous hæmorrhage in one of the bleeding diseases. A most interesting association which has been noted by some early writers and recently stressed by Adie[5] is the comparative frequency of migraine in the history of cases of spontaneous subarachnoid hæmorrhage. Adie observes that aneurysms are certainly not always present in meningeal hæmorrhage in young people, and he suggests the possibility that the hæmorrhage may occasionally be related to some vascular disturbance which in milder degree causes migraine. This recital of causes also leaves out of account altogether the commonest of all causes of subarachnoid hæmorrhage—viz., trauma—but though this is occasionally slight and the history is not clear it is not a cause upon which I need enlarge.

OTHER TYPES

There is a relatively small but very confusing group in which small repeated hæmorrhages occur from an aneurysm. They give rise to slight signs of meningeal irritation, which are easily misinterpreted as rheumatic stiff neck or lumbago. They may be associated with slight fever or other disturbing manifestations, such as slight mental confusion and headache. An account of such attacks of mild meningeal irritation is not infrequently obtained in the previous history of cases which ultimately rupture in more characteristic fashion. Diagnosis can only be made certain by the discovery of blood-stained cerebrospinal fluid.

Diagnosis of unruptured intracranial aneurysm is possible, and indeed not very difficult in some instances where the aneurysm arises from the internal carotid where it joins the circle of Willis. I can best illustrate the clinical picture by mentioning two cases.

A woman of 52 was suddenly seized by severe headache and vomiting, and intense pain remained on the right side of the head and face. At the same time she observed that she had developed double vision. She remained more or less in this condition for six weeks until she came to hospital. Here we found that the outward movement of the right eye was lost, and upward and downward movement very defective, that the right pupil was larger than the left and, although there was no actual anæsthesia, she complained of numbness in the upper and middle divisions of the right fifth nerve—i.e., in the area of pain. In brief, she had paralysis of the third and sixth nerves and involvement of the ophthalmic and maxillary divisions of the fifth nerve. The acute onset with absence of progression of the symptoms, the normal ocular fundi, and the cessation of general headache were all against the diagnosis of intracranial tumour. Radiograms of the skull and examination of the roof of the nose showed nothing to suggest a bony neoplasm. The Wassermann reaction was negative and antisyphilitic treatment ineffective.

The diagnosis of an aneurysm of the internal carotid artery was made, upon which Prof. G. Grey Turner saw the case and suggested ligature of the internal carotid in the neck. This was carried out, and I may say concisely that there was immediate cure of the pain which has not recurred, though she has been under observation for five years; that gradually the ocular symptoms cleared up, and that she is now normal except for a very slight degree of double vision.

I would like particularly to describe the features of a further case in which the diagnosis was made by Dr. J. N. Turnbull, of Corbridge, who sent me the first patient.

This was a woman, aged 50, and she had a very similar history of sudden dreadful neuralgia over the right eye, vomiting and unconsciousness for a few minutes. She was laid up in bed for three weeks while the pain was continuous, and about a week from the onset the right eyelid dropped. In addition she had a squint. She gradually improved until, at the end of about three months, the eyelid was beginning to open, and the pain had diminished considerably. Examined at this period—i.e., three months from the onset—this woman had a right third nerve palsy which was almost complete, and otherwise nothing else abnormal was found in the nervous system. She had, however, a blood pressure of 220 systolic, 100 diastolic.

The significant feature is that six years ago she had an illness which was associated with sharp pains in the back of the head and vomiting, which kept her in bed for three weeks. In this case there was no evidence of growth or syphilis, and the appearance of sudden ocular palsy and fifth nerve involvement with a previous history strongly suggesting a subarachnoid hæmorrhage do not, I think, lend themselves to any other diagnosis.

It may be said that the syndrome of paralysis of the nerves entering the orbit through the sphenoidal fissure should arouse the suspicion of aneurysm of the internal carotid, and that this suspicion receives strong confirmation if there is a history suggesting a previous attack or attacks of spontaneous sub arachnoid hæmorrhage. Symonds,[6] Foggie,[7] and others have described the syndrome and analysed the literature.

Examination of the base of the brain will show that a swelling on the termination of the internal carotid artery is capable of compressing another important series of structures—namely, the optic chiasma and the pituitary body. Such an event has been recorded in association with aneurysm, and I have myself seen such a case.

It was that of a woman of 35 who had been blind in one eye for some five years from primary optic atrophy of unknown origin. She came for advice on account of commencing failure of vision in the second eye, and was found to have a temporal defect of vision typical of a chiasmal lesion, together with a commencing atrophy of the optic nerve. There were no headaches or other symptoms and no signs of dyspituitarism, and only a very slight change in the posterior clinoid process on one side in the radiograms. The appearances seemed typical of suprasellar endothelioma, and an operation was performed which revealed a tumour in the expected situation. Incision revealed *only* too definitely that it was an aneurysm, and though the bleeding was arrested by the skill of the surgeon the patient died shortly afterwards.

Cushing[8] says, "Obviously the neuro-surgeon is not likely unexpectedly to encounter one of these aneurysms, for they rarely produce symptoms unless there has been a leakage, and the aneurysmal sac itself rarely reaches a sufficient size before rupture to give symptomatic evidences of its presence." He goes on to mention that at a meeting of neurological surgeons only one had encountered an aneurysm in the course of intracranial operations, in this case a presumed tumour adjacent to the sella. I cannot help, however, being impressed by the fact that in my own experience I should have encountered several cases in which this diagnosis was clearly permissible, quite apart from rupture, as well as a number of other cases seen in former years in which I now think this diagnosis would have been justified.

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THE
RELATION BETWEEN THE VITAL CAPACITY AND THE ACTIVITY OF THE DISEASE IN PULMONARY TUBERCULOSIS

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John Hutchinson,[1] in his pioneer work on vital capacity in pulmonary tuberculosis, noted in 1846 that in the early stages of phthisis the vital capacity is on an average 78 per cent. of normal, and in the advanced stages it averages 38 per cent. of normal. Dreyer and Burrell[2] in 1920 observed that the vital capacity in pulmonary tuberculosis affords an indication of the severity of the disease, and that serial readings record the progress of an individual patient. Thus in active cases a low vital capacity was found, which rose or fell according as the condition improved or deteriorated. These authors agreed, however, that the vital capacity was also modified by the extent of the disease, the greater the amount of lung involved the lower the vital capacity.

The preponderating importance of the activity of the disease, as opposed to the extent of the lung involved, in determining the vital capacity is indicated by the following observations. In a series of 60 cases I determined the vital capacity, the extent of the disease as shown by the physical signs and the X ray findings, and the activity as judged by the sedimentation-rate of the erythrocytes. It is generally accepted that the sedimentation-rate affords a very accurate guide to activity in pulmonary tuberculosis and also as to the progress of the disease,[3] and my experience of this test in a large series of cases of tuberculosis entirely supports this view. The normal vital capacity in each case was calculated on five standards: standing height, sitting height, weight, chest circumference and surface area, in accordance with the tables given in Myers's book.[4] The mean of these five readings gives the percentage deviation of the patient's vital capacity from the normal. The patient's actual vital capacity was determined by a Hutchinson spirometer.

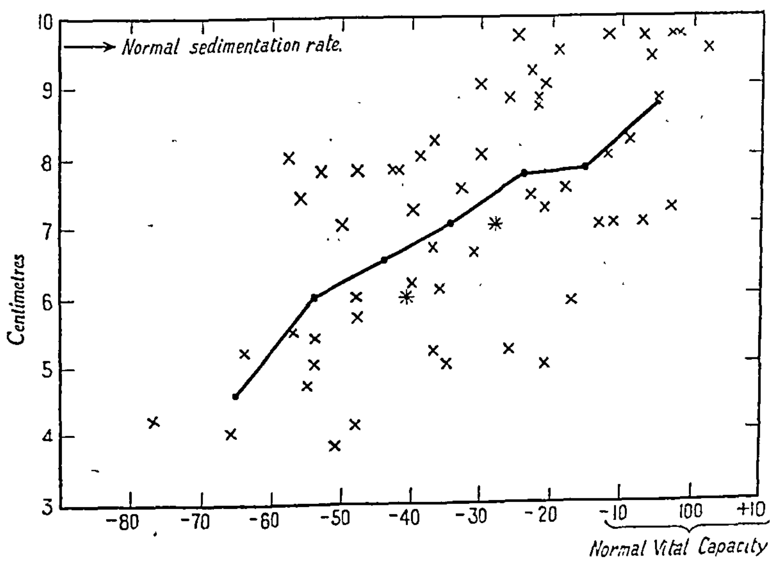

Chart showing the relationship between the vital capacity in pulmonary tuberculosis and the activity of the disease, as judged by the sedimentation-rate of the red cells of the blood in 60 cases. The curve is plotted along the points which are means of the individual readings. In two instances, shown by the stars, the readings of two cases are identical.

In the accompanying Diagram the vital capacity readings are plotted along the abscissa and the sedimentation-rates along the ordinate in each case. The line drawn joins the points which are the mean of the individual readings. It will be seen that there is a definite relationship between the activity of the disease and the vital capacity, irrespective of the amount of lung involved. If, on the other hand, the amount of lung involved by the tuberculous process is substituted for the sedimentation-rate, no such relationship can be demonstrated between vital capacity and extent of disease. Thus an early active localised lesion will usually lower the vital capacity more than an extensive quiescent lesion. Cameron,[5] in a careful study of vital capacity in pulmonary tuberculosis in 198 adults during their treatment in a sanatorium, showed that there was no definite relationship between the weight and vital capacity, but that the vital capacity afforded an estimation of the progress of the patient, and noted that the commonest cause of temporary depressions in the vital capacity was a "cold." In view of the relationship between the vital capacity and activity of the disease, this suggests that the "cold" causes a temporary increase in the activity of the disease. I have further observed in patients who are improving, as, for example, after the establishment of a partial pneumothorax, that the vital capacity rises before the sedimentation-rate shows the improvement. This is presumably due to a diminution in toxæmia, as the pneumothorax has increased the amount of lung which is not functioning.

In reading the chart it should be remembered that there is a normal variation in the vital capacity of ± 10 per cent., and, further, some of the cases charted suffered from bronchitis or emphysema, which of themselves lower the vital capacity. Despite these adverse factors a definite relationship between activity and vital capacity is indicated.

It has been suggested that the lowering of the vital capacity in active pulmonary tuberculosis is due to a toxic weakening of the power of the expiratory muscles. Using a mercury manometer to determine the expiratory force I obtained the following results:—

Active Cases.—10 males and 6 females:
Average maximum expiratory force = 64 mm. Hg.
Non-active Cases.—10 males and 6 females:
Average maximum expiratory force = 71 mm. Hg.

The difference is too small to suggest that there is sufficient weakening of the expiratory muscles in active tuberculosis to cause a marked fall in the vital capacity. The lowered vital capacity possibly depends on some other factor, such as bronchiolar spasm, but of this there is no proof.

These observations were carried out on private and hospital patients, and for help with the latter I wish to express my thanks to Dr. A. J. P. Alexander and Dr. A. J. W. Beard.

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RESULTS OF MASS TREATMENT OF LATE RICKETS AND OSTEOMALACIA *

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INCREASING numbers of cases of late rickets and osteomalacia are being reported from different parts of India, not only because of improved clinical recognition but in certain areas because of an actual increased incidence of the disease, due to changing economic factors adversely affecting the family dietary.

The occurrence of late rickets and osteomalacia, due to deficient diet, among field workers obtaining adequate sunlight in the Kangra district of the Punjab in Northern India, has already been described.[1] Here large numbers of patients are concerned, and financial considerations necessarily limit the choice of treatment. In the Palampur *tahṣil* of the Kangra district, where the results of the osteomalacia inquiry carried out under the Indian Research Fund Association are being applied through the agency of the Punjab Red Cross, the public health and agricultural departments of Punjab, and the Canadian Medical Mission, the methods set out in the accompanying Table have been followed in the effort to obtain practicable means of relief.

It has already been shown that in order to obtain optimum results in treatment, in addition to vitamin D, adequate amounts of vitamins A and C and calcium phosphate salts are necessary,[2] but in the Kangra Valley economic conditions do not permit the inclusion of the common sources of vitamins A and C in the diet in adequate amount.

The summarised results of treatment show that the greatest clinical improvement is obtained from the use of *cod-liver oil* where, in addition to vitamin D, the patient benefits also from the use of vitamin A. Disadvantages are the relatively high cost of the imported oil, certain digestive disturbances, and the unsuitability of a fluid preparation for district work. The *compound tablets* † containing vitamin D (calciferol) together with calcium phosphate salts, undoubtedly have a place in treatment. They are cheap, cause no digestive upset, and are convenient for transport. It is unfortunate that it is not yet possible to include in them vitamin A also, at a low cost.

Sun-irradiated yeast.—The attempts to produce in India yeast suitable for irradiation have already been described.[3] The results here given were obtained from the dried and powdered yeast waste obtained from vats, after the fermentation of molasses had been completed.‡ Facilities for irradiation by artificial ultra-violet light not being available, irradiation by exposure to direct sunlight was utilised instead. The clinical results show that with sun-irradiated yeast improvement of symptoms, though very slow in comparison with cod-liver oil, was definite over a considerable period. The cost was very low, and in view of the large amounts of yeast taken digestive disturbance was surprisingly small (only 10 out of 72 patients complaining of sickness). The material in its present form involved, however, considerable labour in dispensing. The services of a special nurse were utilised, covered by a grant from the Indian Red Cross.

In view of the scanty information available as to methods of direct sun-irradiation of yeast, the time

COMPARISON OF TREATMENTS FOR LATE RICKETS AND OSTEOMALACIA AT PALAMPUR, KANGRA DISTRICT, PUNJAB

Caste.—Hindus living within 18 miles of Palampur, Kangra District.
Sex.—Female, ages 10 to 55 years.
Diet.—Vegetarian, chiefly cereal, low fats.
Sunlight.—Adequate (agricultural workers).

Method.	Season of year.	Average length of treatment.	Total cases.	Clinical condition of patients.*							Remarks.
				Before.			After.				
				+++	++	+	+++	++	+	−	
1. Cod-liver oil ʒi., b.d.	1931: Feb. to Nov.	2 months.	70	30	40	—	—	10	21	41	Clinical improvement noted in 10–15 days.
2. Indian yeast (sun-irradiated) (6–8 hours) ʒiv. daily.	1932: Feb. to Nov.	4 „	72	32	40	—	4	21	41	6	Ditto in 2 months.
3. Compound tablets (calciferol, 2000 units; calc. phosph., grs. 4; sod. phosph., gr. ¼).	1932: Oct. to Nov.	25 days.	16	6	10	—	2	3	9	2	Ditto in 10–15 days.
4. Controls (refused treatment)	Ditto.	1 month.	20	10	10	—	5	15	—	—	—

* Classified as in previous papers; see bibliography.[1]

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* A summary of recent work under the Indian Research Fund Association.

† Supplied by the British Drug Houses Ltd., London.

‡ Supplied by the Amritsar Distillery, Punjab.

of exposure, and the percentage of ergosterol which may thus be activated, it was decided to control the clinical results by animal experiments, for which I am much indebted to Dr. K. H. Coward. The comparison was made between a yeast of known high ergosterol content (yeast I. supplied by the Distillers Company, Limited) and the Indian produced yeast (yeast II. described above). In each case the finely powdered yeast was spread out in a very thin layer and exposed to direct sunlight in October in the Kangra Valley, Palampur (32° N. 76° E.), for one hour, the material being shifted after the first half-hour's exposure.

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THE VITAMIN-D POTENCY OF SUN-IRRADIATED DRIED YEAST

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(From the Pharmacological Laboratories of the Pharmaceutical Society of Great Britain)

The two samples of sun-irradiated dried yeast used in this investigation were examined for vitamin-D potency by animal experiment. The one of known high ergosterol content proved to have been rendered very rich in vitamin D by sun-irradiation, the other was only slightly activated.

Young rats weighing about 60 g. were made rachitic by feeding them on a rickets-producing diet (Steenbock's 2965) for three and a half weeks. The irradiated yeast was then given as a percentage of the diet to certain rats, while others were given a daily dose of the international standard preparation of vitamin D for ten days. The rats were killed, the distal ends of the radii and ulnæ were placed in 4 per cent. formaldehyde for a few days, then separated with a sharp scalpel, cut longitudinally, and stained by placing in 1·5 per cent. silver nitrate and exposing to sunlight. The calcified parts of the bones blackened, and it was thus possible to compare the healing produced in the different bones by the different diets. The results are seen in the accompanying Figure (drawings made direct from the bones).

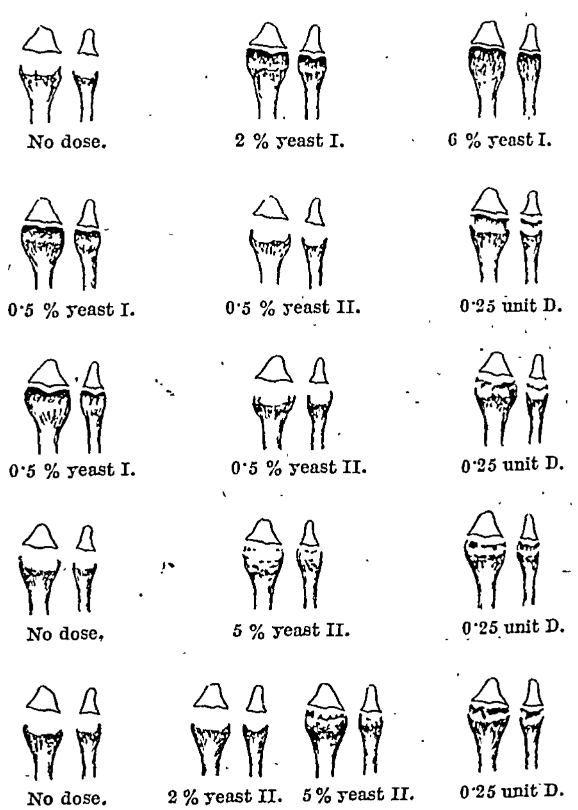
Sample I.—Distillers Co., Ltd., dried yeast. High ergosterol content. Exposed to direct sunlight at Palampur (district Kangra) on Oct. 6th, 1932, from 11 A.M. till noon.

Sample II.—Dried yeast waste from Amritsar Distillery. Exposed to direct sunlight.

The first test on three animals was made with 2 per cent. and 6 per cent. dried yeast I. to determine what dose would be useful for this kind of test. Both doses proved to be rather too high for accurate comparisons. We therefore compared the two samples of dried yeast in doses of 0·5 per cent., with a dose of 0·25 unit vitamin D. It may be seen from the drawings of the bones that:—

(*a*) 0·5 per cent. dried yeast I. has produced more healing that 0·25 unit vitamin D. Calculations from the records of the amount of food eaten by each rat each day during the ten days' test showed that an average of 0·05 g. yeast had been eaten daily by each rat. It is obvious that 0·05 g. of this dried yeast I. contains more than 0·25 unit of vitamin D. Therefore this yeast contains more than 5 units of vitamin D per gramme. It is impossible to say how much more than 5 units without making a further test with doses more nearly equal than 0·05 g. dried yeast and 0·25 unit D. It probably contains as much as 20 units per gramme.

(*b*) There was so little evidence of healing with 0·5 per cent. of yeast II. that further tests were made, using 2 per cent. and 5 per cent. respectively. The lower dose produced no healing, the higher dose produced a little, though certainly less than that produced by 0·25 unit D. Thus 0·5 g. of yeast II. contains less than 0·25 unit D. Therefore it contains less than 0·5 unit per gramme. Again it is impossible without further tests to say how much less than 0·5 unit per gramme it contains, but it may easily be only 0·1 unit per gramme.


No dose. 2 % yeast I. 6 % yeast I.
0·5 % yeast I. 0·5 % yeast II. 0·25 unit D.
0·5 % yeast I. 0·5 % yeast II. 0·25 unit D.
No dose. 5 % yeast II. 0·25 unit D.
No dose. 2 % yeast II. 5 % yeast II. 0·25 unit D.

Drawings of the calcified parts (only) of a radius and ulna from each rat used in the tests. The rats in each horizontal line belonged to the same litter. A severe rachitic condition was produced in each rat as judged by the width of the metaphyses. The degree of healing produced by the sun-irradiated yeast was judged by the amount of calcification produced in the metaphyses of each rat.

It is therefore concluded that yeast may be activated antirachitically by exposure to strong sunlight, and that different samples of dried yeast may differ greatly in the extent to which they may be thus activated.

Sussex Eye Hospital.—Major Lawrence Thornton, Provincial Grand Master for Sussex, with full Masonic rites, has laid the foundation-stone of the new Sussex Eye Hospital in Eastern-road, Brighton, on a site contiguous to the Royal Sussex County Hospital from which it is leased at a nominal rent. It will thus be easy to coördinate the eye work with that of the general hospital. The cost will be £37,000, of which £27,000 has already been raised.

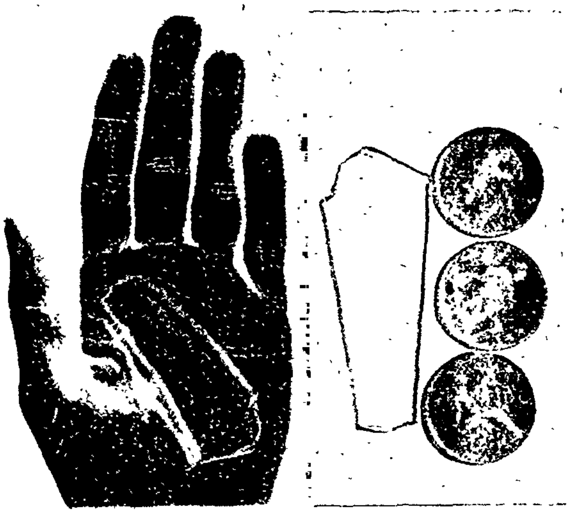
CLINICAL AND LABORATORY NOTES

AN UNSUSPECTED FOREIGN BODY IN THE HAND

BY IAN FRASER, F.R.C.S. ENG. & IREL.
ASSISTANT SURGEON TO THE BELFAST HOSPITAL FOR SICK CHILDREN

THE recovery by operation of a foreign body, known or unsuspected, always gives one a childish satisfaction. The following case has, however, some additional features which encourage one to report it.

A mill-worker while walking along a flat roof covered with snow suddenly disappeared through a glass skylight. He was picked up unhurt except that there was a cut 1½ in. long over the ulnar border of his hand produced by the broken glass as he passed through. He was treated at once. The part was cleaned, visible fragments of glass were removed, and the wound sutured. It healed by first intention but the man's hand remained absolutely stiff; he could not flex his fingers or attempt to close the hand. He was entirely incapacitated. He was treated with massage and various electrical methods with a view to loosening the fingers but all to no purpose.



Photograph of the hand, showing the position of the piece of glass; also a photograph of the glass (alongside three penny pieces) to show its size.

Three months later he thought he felt a grating under the scar and he suspected an overlooked fragment of glass. He came to hospital, where I reopened the old scar and removed the piece of glass shown in the Diagram. It was thick plate-glass and lay between the tendons and the palmar fascia and so had been difficult to palpate. It lay obliquely across the palm as shown in the Figure, almost extending from pisiform to base of index-finger.

The case is of interest in that it shows how a foreign body of large dimensions can be entirely unsuspected.

TWO CASES OF ADDISON'S DISEASE TREATED BY CORTICAL EXTRACT

BY AMBROSE CHARPENTIER, M.D. DURH., D.P.H.

ACCORDING to L. G. Rowntree, Addison's disease may be considered in three phases: (1) an early period in which the disease is latent, the only symptoms being asthenia, fatigue, and wasting; (2) a period in which it is usually recognised and constitutes the classical picture of Addison's disease (pigmentation, black freckles, nausea and vomiting, syncope, hypotension, dehydration); and (3) the stage of collapse (nausea and vomiting extreme, circulatory failure marked) which occurs as a "crisis" and may be terminal.

The diagnosis in the first phase is obviously very difficult. As in many other diseases "early, difficult to recognise, easy to recover"; "later, easy to recognise, but difficult to recover."

CASE 1.—Mrs. A., aged 45, was first seen in December, 1932, complaining of exhaustion and dyspepsia. No pain anywhere. Some dyspepsia and diarrhœa. On examination the pulse-rate was 80, and the heart sounds distant, with a soft mitral murmur. The lungs, abdominal organs, and nervous system were all apparently normal. No sugar, no albumin. Temperature 97° F. Blood pressure 80 systolic and 40 diastolic. Skin cold. Deep bronze discoloration on the forehead, chest, axillæ, groins, and arms; also deep patches of pigmentation on the abdomen. Jet-black freckles on forearms. No marked anæmia. No wasting.

The patient was given adrenaline in increasing doses by mouth and hypodermically. Glucose by the mouth with plenty of liquid. In February a "crisis" occurred. The patient was collapsed, no pulse could be felt at the wrist, the heart sounds were more distant, and the systolic blood pressure 40. Adrenaline was given frequently, hypodermically, and the patient slowly recovered.

I tried to obtain cortin from an American firm but failed, so I prescribed whole adrenal gland capsules together with adrenaline as required. The patient improved slowly, but the pigmentation remained. In July I was able to obtain eucortone made according to Swingle and Pfiffner's direction. I gave a daily injection of 2 c.cm., increasing to 3 c.cm. and 4 c.cm. The improvement was marked and rapid. The pulse is good, 80; temperature normal; systolic blood pressure 120. She can walk a mile without undue fatigue, and can carry out her social duties. She is still taking glucose and large quantities of fruit. The pigmentation is disappearing, spirits are improving, and digestion is good. There is no wasting, but the blood pressure has not risen above 122 mm. Hg. She is now having an injection of 3 to 4 c.cm. twice a week, and is taking whole adrenal gland grs. 10 daily; she also rests out of doors a good deal. Though not yet showing normal strength or energy, she is in fairly good health.

CASE 2.—Miss B., aged 35, a secretary, consulted me in October, 1932, complaining of weakness and constant pain in back and left loin. No physical signs of disease were discovered. Blood pressure 120; temperature subnormal; slightly anæmic; no sugar and no albumin. There was some dyspepsia and she lost weight steadily. She had fainted twice in the street. As she had had tubercle in childhood, I suspected a fresh infection, but found no signs in abdomen or lung. I had the urine examined for tubercle bacilli with negative result.

I advised a rest-cure in a nursing-home, which she had without any improvement. I then sent her to a London hospital, where she was examined by a physician, a gynæcologist, and a surgeon. She was under observation for 19 days and came back with the report: "No physical disease; is suffering from anxiety neurosis." On her return I found pigmentation on her neck. Further examination showed deep discoloration of the axillæ and groins, and a patch on the abdomen; jet-black freckles were found on the arms and forearms.

I gave her capsules of whole adrenal gland, and glucose. As she was going to London again I advised her to consult Dr. Levy Simpson. He agreed that it was a case of Addison's disease and prescribed adrenaline tablets and injections of eucortone. I gave her 2 c.cm. of eucortone daily and the improvement began. Capsules, glucose, and fruit I prescribed in addition. The temperature became normal; pulse good, but tension still 120. The pains have ceased and pigmentation almost disappeared.

The weight is increasing, but slowly. Strength and energy have returned, and to all intents and purposes she is well; but I am afraid to stop the eucortone in case of a recurrence of the symptoms.

These two cases illustrate the definite effect of cortical extract in relieving the symptoms of Addison's disease. The only symptom unaffected by the extract is the hypotension; probably the blood pressure is kept up normally by adrenaline, and it can be raised by injection of this substance.

Some observers believe that there may be a third hormone, and with this possibility in view I give my patients the whole gland as well as the eucortone. It has also been stated that eucortone is allied to ascorbic acid, and that it has a special effect in scurvy. It has been noted that the administration of vitamin hastens the disappearance of the pigmentation in Addison's disease; hence the advisability of the patient's diet consisting largely of fruit and vegetables.

As thyroid replaces a substance wanting in myxœdema, and insulin one in diabetes, so cortical extract replaces a hormone wanting in Addison's disease. By analogy one would suppose that there are many persons asthenic from insufficient cortical hormone without showing other symptoms of Addison's disease, just as there are persons suffering from "hypothyroidism" without definite myxœdema. If my memory serves me aright, Dr. C. R. Box taught this at St. Thomas's Hospital many years ago. Unfortunately, so far, experiments with cortical extract in conditions other than Addison's disease have not shown any success.

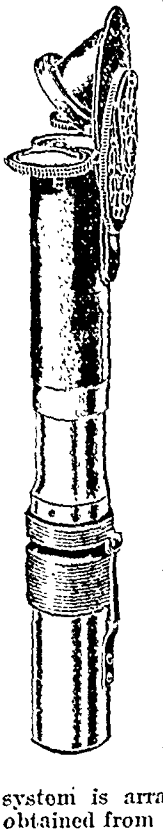
The patient in Case 2 evidently has a tuberculous tendency, and as three-fifths of the cases of Addison's disease are due to tuberculous invasion of the adrenal gland, it may be that in this case the left adrenal gland is infected. An X ray photograph shows a shadow of the left gland but not of the right. The possibility of an underlying tuberculosis must not be lost sight of in treatment, and the general condition should be treated as well as the particular dysfunction of the adrenal glands.

St. Helier, Jersey.

NEW INVENTIONS

A POCKET OPHTHALMOSCOPE AND FOCAL ILLUMINATOR

THIS instrument has been designed for use at clinical meetings. The basis is the popular Ever Ready fountain-pen torch. The ordinary lamp-bulb is replaced by one with a point filament, and a strong condensing lens system is held in front by a finely threaded screw-cap. By turning the cap, and by twisting the lamp-bulb in its socket, the distance between filament and lens system can be adjusted. Thus far the instrument makes a satisfactory focal illuminator, giving a clear and very bright circle of light. The other part of the instrument (carried loose in the pocket and slipped on when required) consists of a small disc of ophthalmoscope lenses, a mirror fitted with a glare shield, and a tube terminating in swing-in cells, into which the torch with its lens cap can be placed. There is a spring cut in the tube, which will hold the head firmly with respect to the torch.



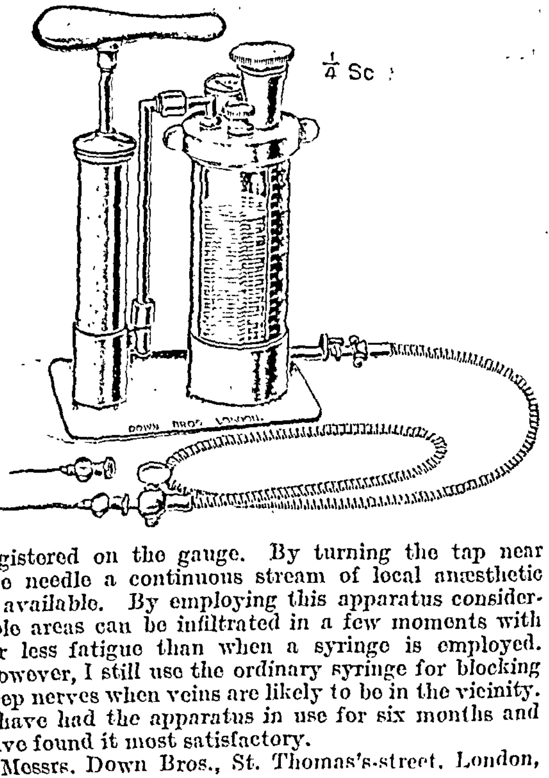
The immediate effect of the addition of the ophthalmoscope head, if the cells are not in the path, is to turn the beam through 90° by means of the mirror. The beam is very slightly divergent, so that the instrument can be used as an electric retinoscope. One of the cells at the top of the tube contains a convex lens, which, if inserted into the beam, converts the instrument into an ophthalmoscope. The single disc of lenses contains the following powers: −1, −2, −3, −4, −5, +1, +2, +3, +4, +6, +8. There is a small sector superimposed containing −6 and +10, giving the instrument a considerable range within a compact disc. The cell at the top of the tube, which can be introduced into the beam at the same time as the other, may be fitted with a red-free or other coloured filter. The lens system is arranged so that prolonged efficiency is obtained from any one battery.

It is inconvenient to carry a bulky electric ophthalmoscope to clinical meetings, and it is for this reason that the instrument has been devised. It is made by Messrs. Rayner Ltd., 100, New Bond-street, London, W.

J. W. TUDOR THOMAS, M.S. Lond.

AN APPARATUS FOR LOCAL ANÆSTHESIA

FOR infiltrating large areas with local anæsthetic the apparatus shown in the illustration has many advantages. After being sterilised by boiling, the apparatus is filled with 1 per cent. novocain, and the pump is operated until the desired pressure is registered on the gauge. By turning the tap near the needle a continuous stream of local anæsthetic is available. By employing this apparatus considerable areas can be infiltrated in a few moments with far less fatigue than when a syringe is employed. However, I still use the ordinary syringe for blocking deep nerves when veins are likely to be in the vicinity. I have had the apparatus in use for six months and have found it most satisfactory.



Messrs. Down Bros., St. Thomas's-street, London, S.E., are the makers.

HAMILTON BAILEY, F.R.C.S. Eng.

REVIEWS AND NOTICES OF BOOKS

Starling's Principles of Human Physiology

Sixth edition. Edited and revised by C. LOVATT EVANS, D.Sc., F.R.C.P., F.R.S., Jodrell Professor of Physiology, University College, London. The chapters on the Central Nervous System and Sense Organs revised by H. HARTRIDGE, M.A., M.D., Sc.D., F.R.S., Professor of Physiology at St. Bartholomew's Medical College. London: J. and A. Churchill. 1933. Pp. 1122. 24s.

PHYSIOLOGY is moving so fast that the last edition of Starling's Physiology, only published three years ago, needed very generous revision, and in some parts actual rewriting, to bring it up to date. The necessary changes have been made with great skill by Prof. Lovatt Evans, and he deserves the thanks of teachers as well as students for the outcome of his labours. A feature of the new edition, which many must long have desired in a text-book of this importance, is the addition of references, both general and particular.

Starling's Physiology has become, over the course of years, a text-book for the more thoughtful student, who will appreciate a moderate number of carefully chosen references, to show him where further knowledge may be obtained on special points. Wide reading, even at an early stage, is useful to mitigate a tendency to acquire dogmatic views, and to bridge the gap between elementary and advanced reading. A feature which will give satisfaction to all who look at physiology in its broader aspect is the insertion of a certain amount of historical matter. Some would argue that it might be even greater in amount without disadvantage, on the ground that the history of a science is an integral part of that science. The great physiologists of a century, or two centuries, or three centuries ago made many lasting contributions to the subject, and their work should be honoured by succeeding generations. On the other hand, the curiosity of a student keen to learn the present state of knowledge on, say, the functions of the liver or kidneys, may be slightly damped by having to study previous discarded theories before coming to the modern view. The compromise between complete neglect of history and the approach through a ladder of dates and obsolete work has been well planned.

In the section dealing with the nervous system, much recent work has been incorporated; one would like to see even more. Those interested in terminology will regret that Sherrington's carefully considered nomenclature is not more generally adopted—e.g., "sensory" should be changed to "afferent" in many places. The treatment of the autonomic nervous system is still not the best possible, and one would have hoped, from a physiologist's point of view, that Prof. Hartridge would abandon the cranial nerves, which are not physiological entities, and substitute an orderly classification on embryological lines of the columns of nuclei, which are. This change is, in the opinion of many, long overdue, for such a treatment of the central nervous system makes it much more intelligible to the student, who is, after all, the person most concerned.

These criticisms are, however, applicable to most present text-books, and one would not care, by reference to small things, to leave an impression of anything but high appreciation of this new edition of Starling's Physiology. Prof. Lovatt Evans and Prof. Hartridge deserve the thanks of students, and of those who teach them, for the vast amount of work in which they have been involved, and for the excellence of this product of their labours.

Handbuch der Röntgendiagnostik und Therapie im Kindersalter

By ST. ENGEL (Dortmund) and L. SCHALL (Homburg-Saar). Leipzig: Georg Thieme. 1933. Pp. 720. M.72.

RADIOLOGISTS who have made acquaintance with the remarkable text-book of radiology by Baensch, Friedl, and Schinz, previously issued by the same publishers, will welcome as a companion volume this excellent treatise on the radiology and radiotherapy of the diseases of children. It is a compilation, on the same general lines, of special articles by recognised experts in various branches of radiology. The editors modestly describe even a work of this size as a "beginning," having regard to the rapid advances of radiology in recent years; but they have done their work so well that it takes rank as a standard work on the subject to-day.

They have concentrated on those aspects of disease peculiar to children, merely touching upon conditions common to children and adults. The section on skeletal diseases is very brief, occupying less than 60 pages, but the rather sketchy descriptions of developmental and acquired disease are amplified by useful bibliographies. The sections dealing with internal disease, particularly of the chest, are handled with great thoroughness and method. The section on the chest contains 330 pages, very fully illustrated, and is introduced by a careful study of the development of the thorax, and of the changes and modifications resulting from natural growth and from skeletal disease. The importance of the lymphatic apparatus justifies the inclusion of an excellent anatomical study of the glands and of lymphatic drainage in relation to chest disease. Interesting and informative articles on the pneumonias of childhood are contributed by St. Engel and Samson, who emphasise the variation of type with the age of the child, pointing out the frequency of paravertebral pneumonia in infancy, of the lobular form in early childhood, and the lobar during school age. No radiologist can hope to understand the radiology of the lung and pleura without a clear understanding of anatomy, and Schonfield's article on the pleura, on the anatomy of the interlobes, and on abnormalities of lobation is especially valuable. Recent German work on tuberculosis of the lung, particularly the classification of its varying forms, is of paramount importance; and although we may not be prepared to accept all their conclusions, the pioneer work of German workers in this field already forms an accepted basis for serious study. The contributions on primary tuberculosis and bronchial gland tuberculosis (Gottche), on infiltrations (Priesel); on hæmatogenous disseminate tuberculosis (Redeker), and on phthisis (Simon) thus deserve detailed attention. Very useful also is the section on the mediastinum, in which especial attention is directed to thymic enlargement. The opinion is expressed that the diagnosis of this enlargement in the ordinary postero-anterior skiagram is virtually impossible. Simple elevation of the diaphragm following a meal may, for example, produce the broadening of the mediastinal shadows described in text-books as "characteristic" of thymic hyperplasia. Another section of great interest is that on heart disease which contains the best summary of congenital heart lesions and their X ray appearances which we have yet seen. In the section on the alimentary tract a somewhat fuller treatment of pyloric obstruction would be desirable, and the section on megacolon curiously omits all reference to the rôle of the sympathetic. The section on diseases of the skull and brain, and on encephalography is very good, and also that on radiotherapy by Holthuser and others. This contains useful discussions upon the problems of radiosensitivity of children, on the risk of damage to the fœtus by irradiation of the mother—a risk which is here found to be by no means negligible—and on the routine treatment of diseases of blood, ductless glands, and the skin, and of tumours, especially brain tumours.

Altogether this book deserves high praise for matter, style of production, and quality of illustrations.

The Diagnosis and Treatment of Diabetes

By W. WILSON INGRAM, M.C., M.D. Aberd., Honorary Physician and Physician in Charge of the Clinic for Diabetes Mellitus, and Honorary Director, Institute of Medical Research, Royal North Shore Hospital, Sydney; and G. V. RUDD, M.Sc. Melb., Research Biochemist to the Institute. London: Australian Book Co. 1933. Pp. 88. 5s.

IN this little book the problems of the errors of metabolism which occur in diabetes are discussed quite adequately in simple terms. The diagnosis by means of estimations of the blood-sugar and of sugar-tolerance tests is described more fully. The principles of the diet suitable for the diabetics are set out, the high carbohydrate-low fat diet being adopted. The diets selected seem rather inflexible, and the actual amount of carbohydrate and fat contained in each diet is omitted; although in some the calories and protein content are given, but in most of them only the calorie content is given. The food tables are set out in the old form of so many grammes of carbohydrate, protein, and fat in 1 oz. of the substance, instead of in the more convenient form which states that the substance contains 5 g. of each kind of food. This modern method enables the patient to change one article of food for another without making any calculations, and should be adopted in a subsequent edition. The chapter on the use of insulin and the treatment of complications is short but clear.

The manual is intended primarily for the use of practitioners, and should be well received.

A Synopsis of Public Health

By E. W. CARYL THOMAS, M.D., B.Sc. Lond., D.P.H., Barrister-at-Law; Medical Officer of Health, Dagenham. Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd. Pp. 646. 21s.

THIS book is appropriately described as a synopsis. It provides also an index and summary of the practice, administration, and law of public health, and in addition, summaries of the facts relating to the sciences upon which public health practice is based. The information is up to date and a very careful scrutiny has failed to find any errors of fact.

The book is one of a series prepared for students, in this case for students working for the diploma in public health or a degree in State medicine or sanitary science, and if a student must rely on one text-book to cover the whole field this compilation of accurate information will appeal to him. In most people, however, nothing could be more calculated to kill enthusiasm for a career in preventive medicine than an approach limited to the study of one book, however excellent. We can with much more confidence recommend it to medical officers of health, who will find in it facts which will be of great use in the preparation of reports to their committees, and to teachers of public health. The very full bibliographies at the end of each chapter redeem the work from pedestrianism and indicate the colossal amount of labour which its preparation has involved. The index is complete and altogether the book is a model of its kind.

Synopsis of Gynecology

By HARRY STURGEON CROSSEN, M.D., F.A.C.S., Professor of Clinical Gynecology in the Washington University, St. Louis; and ROBERT JAMES CROSSEN, M.D. London: Henry Kimpton. Pp. 227. 15s.

THIS small book is one of the most satisfactory gynæcological publications of recent years. Prof. Crossen points out that a large mass of facts accumulated in the various branches of medicine tends to the production of expensive text-books which the average student has neither the funds to buy nor the time to read. He suggests boldly that students should be divided into those who intend to practise gynæcology as a specialty and those who are going in for general practice. For the latter group a wide knowledge of gynæcology is, he holds, unnecessary, and he has therefore prepared this synopsis, which presents in short space a fairly comprehensive survey of the subject. The result is exceptionally satisfactory, for particular emphasis is placed upon the clinical side, and about a quarter of the book is devoted to methods of examination and the elucidation of physical signs. Similarly the résumé of the work on the endocrine glands is shortly and accurately presented. In the operative section emphasis is placed on after-treatment and there is little or no detail of the various surgical methods.

Prof. Crossen and his collaborator are to be congratulated not only on the success with which they have stated their case, but also on the action they have taken in support of their views on medical education. The book can be strongly commended to students starting their gynæcological studies.

Marriage, Children, and God

By CLAUD MULLINS. London: George Allen and Unwin. 1933. Pp. 223. 6s.

Mr. Mullins's book, which is supported by a preface by the Bishop of Southwark, seeks to reconcile the deliberate limitation of families (by abstinence if this is possible; if not, by contraception) with the principles of religion. The author is well known as a London magistrate, and his plea is essentially based upon his experiences in courts of law, wherein he has been convinced that much domestic strife could be avoided by a rational sex education. The volume contains numerous quotations from ecclesiastical authorities, and is primarily designed for those who, on religious grounds, oppose the inclusion of advice on contraception in schemes of sex education or of preparation for marriage. Careful consideration is given to the opinions of Jewish and Roman Catholic authorities, and throughout the author writes as one who is within the church and accepts its moral standards. Emphasis is given to this standpoint by the vigour with which Mr. Mullins dissociates himself from such writers as Lord Russell and Judge Ben Lindsey. As its title implies, the book contains no original observations of primarily medical interest, though it will prove helpful to many sincere people who, on ethical grounds, find it difficult to accept the implications of contraception.

CORRIGENDUM.—The additional volume to the work on Operative Surgery by W. S. Bickham and C. M. Smyth, reviewed in our issue last week, was Vol. VII., and not Vol. III. as stated.

BELLE VUE SPA AND HOTEL

TREFRIW, NORTH WALES

The combination of medical treatment and comfortable residence amid beautiful scenery offers great attraction to visitors as well as patients.

Thirty bedrooms, magnificent lounges, billiard room, tennis court, eight and a half miles of salmon and trout fishing, and golf courses within easy reach. The new bath and treatment rooms within the Belle Vue Spa's grounds, recently opened by an eminent surgeon, are equipped with the most up-to-date apparatus for electrical treatment.

The Belle Vue Spa sulphur-iron water (ferrous sulphate), described by medical men as the purest and most highly concentrated in the world, is collected from an ancient Roman mine according to medical advice, so as to prevent any air coming in contact with the iron water.

Sufferers from Rheumatoid Arthritis or Osteo-Arthritis in hips or knees, who have been bedridden for months or years and want to walk again without pain, can avail themselves of the Hoeffitcke Ambulatory Extension Treatment.

Special facilities are provided for those requiring this treatment in the nursing wing under medical supervision.

This treatment has been favourably commented upon by many eminent medical men in the Medical Journals.

See *The Medical Press and Circular*, April 27th, 1932, pp. 348–351 : Ambulatory Treatment of Fractures and Diseased Joints by the Hoeffitcke Extension Splint.

For reprints and further particulars apply The Secretary, Belle Vue Spa, Trefriw, N. Wales, or Mr. C. A. Hoeffitcke, 7, Harley Street, London, W.1.

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its lifting and sustaining powers—as compared with other spirits depends on the presence or absence of the higher Alcohols or Ethers. These in turn depend on Grape, Soil, Stills employed, Climate, Storage, Selection and Experience.

It is quite easy to make a spirit from grape wine—It is neither easy nor cheap to make a Brandy containing the qualities you want.

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Take no risks; ensure the results you expect

Prescribe Brandy distilled in Pot Stills from Wines grown in the best Cognac districts; Matured in warehouses which have been filled with Cognac Brandy for centuries; Made by Men with the inherited Experience of Seven Generations.

In short—Prescribe MARTELL'S BRANDY

and know that you are doing the best possible for your patients.

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The manual is intended primarily for the use of practitioners, and should be well received.

A Synopsis of Public Health

By E. W. Caryl Thomas, M.D., B.Sc. Lond., D.P.H., Barrister-at-Law; Medical Officer of Health, Dagenham. Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd. Pp. 646. 21s.

This book is appropriately described as a synopsis. It provides also an index and summary of the practice, administration, and law of public health, and in addition, summaries of the facts relating to the sciences upon which public health practice is based. The information is up to date and a very careful scrutiny has failed to find any errors of fact.

The book is one of a series prepared for students, in this case for students working for the diploma in public health or a degree in State medicine or sanitary science, and if a student must rely on one text-book to cover the whole field this compilation of accurate information will appeal to him. In most people, however, nothing could be more calculated to kill enthusiasm for a career in preventive medicine than an approach limited to the study of one book, however excellent. We can with much more confidence recommend it to medical officers of health, who will find in it facts which will be of great use in the preparation of reports to their committees, and to teachers of public health. The very full bibliographies at the end of each chapter redeem the work from pedestrianism and indicate the colossal amount of labour which its preparation has involved. The index is complete and altogether the book is a model of its kind.

Synopsis of Gynecology

By Harry Sturgeon Crossen, M.D., F.A.C.S., Professor of Clinical Gynecology in the Washington University, St. Louis; and Robert James Crossen, M.D. London: Henry Kimpton. Pp. 227. 15s.

This small book is one of the most satisfactory gynæcological publications of recent years. Prof. Crossen points out that a large mass of facts accumulated in the various branches of medicine tends to the production of expensive text-books which the average student has neither the funds to buy nor the time to read. He suggests boldly that students should be divided into those who intend to practise gynæcology as a specialty and those who are going in for general practice. For the latter group a wide knowledge of gynæcology is, he holds, unnecessary, and he has therefore prepared this synopsis, which presents in short space a fairly comprehensive survey of the subject. The result is exceptionally satisfactory, for particular emphasis is placed upon the clinical side, and about a quarter of the book is devoted to methods of examination and the elucidation of physical signs. Similarly the résumé of the work on the endocrine glands is shortly and accurately presented. In the operative section emphasis is placed on after-treatment and there is little or no detail of the various surgical methods.

Prof. Crossen and his collaborator are to be congratulated not only on the success with which they have stated their case, but also on the action they have taken in support of their views on medical education. The book can be strongly commended to students starting their gynæcological studies.

Marriage, Children, and God

By Claud Mullins. London: George Allen and Unwin. 1933. Pp. 223. 6s.

Mr. Mullins's book, which is supported by a preface by the Bishop of Southwark, seeks to reconcile the deliberate limitation of families (by abstinence if this is possible; if not, by contraception) with the principles of religion. The author is well known as a London magistrate, and his plea is essentially based upon his experiences in courts of law, wherein he has been convinced that much domestic strife could be avoided by a rational sex education. The volume contains numerous quotations from ecclesiastical authorities, and is primarily designed for those who, on religious grounds, oppose the inclusion of advice on contraception in schemes of sex education or of preparation for marriage. Careful consideration is given to the opinions of Jewish and Roman Catholic authorities, and throughout the author writes as one who is within the church and accepts its moral standards. Emphasis is given to this standpoint by the vigour with which Mr. Mullins dissociates himself from such writers as Lord Russell and Judge Ben Lindsey. As its title implies, the book contains no original observations of primarily medical interest, though it will prove helpful to many sincere people who, on ethical grounds, find it difficult to accept the implications of contraception.

Corrigendum.—The additional volume to the work on Operative Surgery by W. S. Bickham and C. M. Smyth, reviewed in our issue last week, was Vol. VII., and not Vol. III. as stated.

THE LANCET

LONDON: SATURDAY, OCTOBER 21, 1933

NOTIFICATION OF FOOD POISONING

WHILE we are getting to know something about the causation of food poisoning, the numerous outbreaks which still occur show how difficult it is proving to put this knowledge into practice. The suggestion has often been made that food poisoning should be added to the list of conditions to be notified by the medical practitioner, and under the provisions of the London County Council (General Powers) Act, 1932 (Section 7), medical practitioners are required to notify the borough medical officers of health of any persons who are suffering or are suspected to be suffering from food poisoning. The Act became operative in July, 1932, and in a recent report Sir FREDERICK MENZIES states that during the second half of that year particulars of 466 cases were received. There appears to have been no widespread infection from any one source, except that 14 cases were reported amongst a wedding party in Bethnal Green, where the food suspected was chopped liver. The report unfortunately does not specify the number of outbreaks in which more than one person was affected, but in a great many instances there must have been only one sufferer. Single-person cases are particularly difficult to elucidate, but in recent years there have been a good many such instances of definite food poisoning where, with detailed investigation, the bacterial cause has been ascertained. In a number of cases notified as food poisoning inquiry showed that the practitioner had failed to distinguish between true food poisoning and personal idiosyncrasy or physiological reactions to gross indiscretions of diet. Several borough medical officers, among them Dr. W. STOTT (Southwark) and Dr. G. C. TROTTER (Islington), have felt constrained to issue circulars drawing attention to the need for a clear conception as to what constitutes food poisoning. Dr. TROTTER points out that food poisoning is when the food itself is poisoned either by bacteria or other poison, and the individual is poisoned by partaking of the same, and that it does not include faulty digestion or allergic cases. But the difficulty of defining food poisoning is a drawback to notification. The condition may be due to infection of the food with living bacilli and as such is difficult to distinguish by definition from dysentery or typhoid fever infections. On the other hand, the cause may be some chemical substance either added to the food directly or produced by bacterial activity. Again, where but a single patient is affected these two varieties of poisoning may be hard to distinguish from those in which the main factor is an abnormal reaction which would be harmless to other people. This point is emphasised, since it implies that any system of notification will result in the reporting of cases which are not genuine food poisoning.

Notification of itself is of but little help unless it includes skilled investigation. The subject is highly technical and requires, in many cases, knowledge beyond that possessed by the ordinary inspectorial staff. A routine inquiry, however conscientious, is likely to pass over much that may be of value, although it may have its use in ruling out what is trifling and manifestly not food poisoning at all. For the residuum the investigation should be in the hands of someone acquainted with the distribution of food poisoning organisms in nature, able to judge when (and when not) to take samples for bacteriological and chemical examination, and exactly what to sample. The elucidation of a genuine outbreak is a detective problem which may sometimes demand a Sherlock Holmes, but always requires extensive knowledge of the subject. To explain fully any individual outbreak of food poisoning it is necessary to know the answer to four questions. What is the vehicle of infection ? What is the cause of the poisoning, bacterial or otherwise ? The third question relates mainly to bacterial infections—what is the reservoir from which were derived the bacteria which infected the food ? Fourthly, what is the path by which the bacteria were conveyed from the reservoir of infection to the vehicle ? Our knowledge of the causative factors is extensive, the vehicle of infection is usually simple to ascertain, the reservoirs of the salmonella group of bacteria and other strains responsible for food poisoning are gradually being brought to light, but knowledge lags in reply to the fourth question. As Dr. W. G. SAVAGE pointed out in his Sedgwick lecture last year,[1] the path of infection has not been discovered in more than 10 per cent. of recent outbreaks. This lacuna in our knowledge can best be filled by expert painstaking investigation.

WHERE RADIUM NOW STANDS

FOUR years have gone by since Lord LEE OF FAREHAM was appointed the first chairman of the National Radium Commission, and his statutory retirement with five original members of the Commission has given an occasion to sum up the work of the Commission during its first quadrennial stage.[2] The primary duty laid by Royal Charter on the Commission was to make arrangements for the proper custody, equitable distribution, and full use of the radium entrusted to them ; and in the execution of their national policy a network of 17 fully equipped radium centres has been established throughout the country. Nineteen grammes of radium have been purchased by the Trust and rather over 17 grammes of this have been loaned by the Commission to " national "

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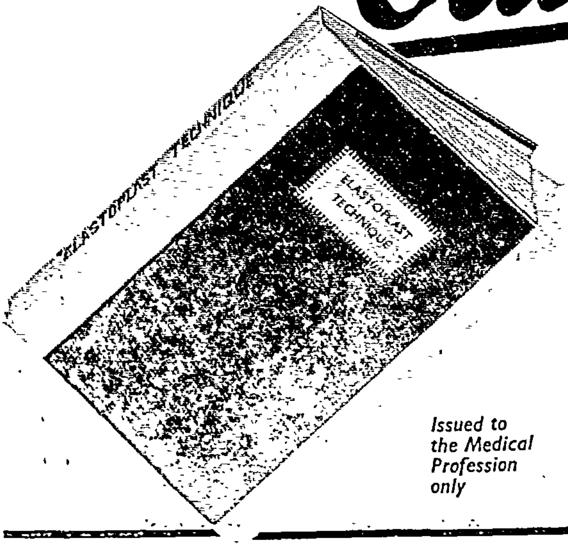

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At the national centres the principle of concentration has been rigidly enforced by the Commission on grounds neatly stated in the following paragraph:

> The character of radium itself, and its distribution in such a large variety of containers, necessitate the holding of a large stock if a centre is to be able to deal with different kinds of cancer efficiently and without delay. The proportion of cancer cases which can be adequately treated by radium alone is, however, comparatively small, and other treatments are frequently necessary, such as operative surgery and the use of X rays; pathological examinations are also constantly required. All these methods of diagnosis and treatment require an adequately trained personnel, whose services, with the necessary apparatus and suitable laboratory accommodation, can only be made available in large and fully equipped hospitals. When it is added that treatment must be accompanied by research, involving the physical character and biological effects of radium, the assessment of the results attained by treatment, and access to the technical literature of the subject, the need for concentration of treatment at special centres becomes at once apparent.

For many of the centres this principle has entailed the creation of entirely new organisations, and in places like Edinburgh and Manchester the report recognises striking progress in placing radium treatment at the service of cancer patients. At other centres economic difficulties have delayed progress, and in one case doubt has arisen whether the centre should continue. In another place where at first only selected members of the honorary staffs had the right to use the national radium all the members are now on the staff of the centre. At Glasgow the need for two national centres has been allowed. Recognising the fact that there are important sections of the country too remote to share in the facilities offered by the national centres, the Commission has formed supplementary regional centres at Stoke-on-Trent, Norwich, Southampton, and Plymouth. Lincoln will also, it seems, have its own centre, although at Nottingham a similar proposal has been withdrawn owing to the scattering of radium throughout the county, which is in conflict with the Com- ission's principle. Other hospitals outside both tional and regional centres have asked for recognition by the Commission, and this it is proposed to give after inspection has established the presence of certain standards.

The tasks which lie ahead of the Commission are mainly those of (1) consolidating and supervising the national structure which it has created; (2) controlling the stock of radium which it has issued on loan; and (3) compiling clinical statistics. In considering the second of these tasks it is a little remarkable to read in the report of the Trust of the rather light-hearted way in which the custody of radium is regarded. At the close of last financial year a sum of £654 was due from the underwriters in respect of the loss at one centre of 13 containers, with 110 milligrammes of radium. Clinker from the hospital's furnace was found to be radio-active and this led to the recovery of rather more than half the lost element. Under the rules casualties of every kind must be reported at once to the Commission and to the National Physical Laboratory, which is prepared to send on request a representative to assist in the search for missing containers. Damage to containers is still not infrequent, and experience suggests that there would be no clinical disadvantage in using platinum needles with walls 0·7 to 0·8 mm. thick instead of the customary 0·5 mm. Care is rendered still more desirable by the rise of 30 to 40 per cent. in the price of radium, which has led the Trust to purchase very little new radium during the year. In considering its third task the Commission admits that some time must still elapse before the question how much value is to be attached to radium treatment in cancer can be answered in terms of figures. Last April Mr. R. W. RAVEN, F.R.C.S., became registrar to the Commission, and under his direction statistics are being compile
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PREGNANCY AND INCAPACITY

WE recorded last week an attempt made at the conference on Oct. 5th convened by the London insurance committee to devise some measure of the incapacity consequent on pregnancy that might lead to greater uniformity in the certification of insured women for sickness benefit. The discussion scarcely seems to have done more than reveal the complexities of the problem. As a normal condition, pregnancy may not in itself afford a clear-cut reason for certification for sickness benefit, but, during its later period
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It is also difficult to see how a probable date for the expected confinement on the certificate will be helpful, for anything from two to four weeks must be allowed as a margin of error in all such estimates. The best suggestion would seem to be some form of special pregnancy benefit, thus recognising the difficulties inherent in the question, but the dating of its duration from some specified time, such as four or eight weeks before confinement, would call for adjustment after the event. An increase of maternity benefit displacing sickness benefit, or compensation for any illness arising out of pregnancy, would seem to open endless complications as to the relation of the illness to pregnancy. On the other hand, the whole system of maternity benefit calls for complete review. The present plan of a cash-down payment to be spent at the discretion of the recipient is popular with insured persons but less so with those who have rendered services during pregnancy and at childbirth and find the benefit has gone to grosser purposes and left them unrequited. It is unlikely that any formula of the type put forward at the recent conference will provide a satisfactory solution, and it is clear that the time is overdue for revision of the whole insurance system so far as it affects the pregnant woman.

It is not only in respect of insurance but also in respect of leave from salaried appointments on full pay that the employment of young married women brings problems still to be solved. In the *Times* of Sept. 29th it is reported that the recommendations of the Royal Commission on
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suggestion does not seem to us to err on the side of generosity, but is at least an advance, as a biological attitude, on one which insists on retirement on marriage without regard to circumstances, or one which, allowing marriage, assumes that pregnancy necessarily warrants dismissal. The University of Liverpool is the latest recruit to the ranks of authorities which insist on retirement on marriage, and their action has led to well-reasoned protest. Our plea (see THE LANCET, Oct. 7th, p. 812) for academic freedom for university workers in all countries has here a native application.

IRRADIATED ERGOSTEROL IN CLINICAL MEDICINE

THE therapeutic use of irradiated ergosterol for human patients has always met with a certain amount of opposition, partly because it is not a natural product, and partly because it is undoubtedly capable of producing specific pathological lesions when it is given in very large doses. Whether these lesions are due to vitamin D itself or to other products of irradiation is still disputed, but DALE and co-workers[1] have shown convincingly that pure calciferol administered to dogs in very large doses has the same toxic properties as the impure mixed products of irradiation. This suggests that it is impossible to produce a vitamin-D preparation which will not be toxic if given in overdose; but there is of course no reason why an overdose of irradiated ergosterol should be given, any more than an overdose of any other active drug. The value of a preparation of irradiated ergosterol can be accurately established in international units of vitamin D, by a biological test, and the material is so concentrated that a large batch can be evaluated with a single test. Cod-liver oil, on the other hand, can only be evaluated biologically in comparatively small batches, so that either repeated tests have to be made or else the value of a number of batches has to be taken on trust. Of other "natural" alternatives, the latest and perhaps the cheapest is sun-irradiated yeast, which Dr. DAGMAR WILSON has been using in India. But the reports on pp. 919 and 920 show, incidentally, how very different may be the potency induced in two different samples of yeast by exposure to the same Indian sun. An
yeast developed a vitamin-D
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PREGNANCY AND INCAPACITY

We recorded last week an attempt made at the conference on Oct. 5th convened by the London insurance committee to devise some measure of the incapacity consequent on pregnancy that might lead to greater uniformity in the certification of insured women for sickness benefit. The discussion scarcely seems to have done more than reveal the complexities of the problem. As a normal condition, pregnancy may not in itself afford a clear-cut reason for certification for sickness benefit, but, during its later period, activity and capacity for continued exertion are lessened and even the maintenance of the erect position is provocative of fatigue, so that the plea of incapacity within the meaning of the Act can readily be justified. Ability to do housework cannot be regarded as a temporary equivalent, because though it may be as fatiguing as charing, office cleaning, or other external work of a like nature, it is mostly possible for the housewife doing her own work to take spells of rest as and when she feels inclined, and thus to lessen fatigue and the mechanical effects of advanced gestation. The easy-going instruction is given to the expectant mother by midwife or health visitor to sit on one chair with her feet up on another while peeling potatoes. But this does not suggest that capacity for some housework is a criterion of capacity for full duty.

It is also difficult to see how a probable date for the expected confinement on the certificate will be helpful, for anything from two to four weeks must be allowed as a margin of error in all such estimates. The best suggestion would seem to be some form of special pregnancy benefit, thus recognising the difficulties inherent in the question, but the dating of its duration from some specified time, such as four or eight weeks before confinement, would call for adjustment after the event. An increase of maternity benefit displacing sickness benefit, or compensation for any illness arising out of pregnancy, would seem to open endless complications as to the relation of the illness to pregnancy. On the other hand, the whole system of maternity benefit calls for complete review. The present plan of a cash-down payment to be spent at the discretion of the recipient is popular with insured persons but less so with those who have rendered services during pregnancy and at childbirth and find the benefit has gone to grosser purposes and left them unrequited. It is unlikely that any formula of the type put forward at the recent conference will provide a satisfactory solution, and it is clear that the time is overdue for revision of the whole insurance system so far as it affects the pregnant woman.

It is not only in respect of insurance but also in respect of leave from salaried appointments on full pay that the employment of young married women brings problems still to be solved. In the *Times* of Sept. 29th it is reported that the recommendations of the Royal Commission on married women in the Civil Service have been under consideration by a joint committee. It will be remembered that the Royal Commission recommended that applications for the retention of a woman in the Civil Service after marriage should be considered in the light of her special qualifications or special experience in the duties required of her, or of the special requirements of the department in which she is serving. Since the Royal Commission considered this question two women have been allowed to continue their employment in the Civil Service after marriage, one being a medical inspector in the factory department of the Home Office, the other a second-class officer in the Ministry of Labour. The official side of the joint committee now propose that women retained in the service after marriage shall be granted maternity leave on full pay for two months with the possibility of an extension to three months on production of a medical certificate. This suggestion does not seem to us to err on the side of generosity, but is at least an advance, as a biological attitude, on one which insists on retirement on marriage without regard to circumstances, or one which, allowing marriage, assumes that pregnancy necessarily warrants dismissal. The University of Liverpool is the latest recruit to the ranks of authorities which insist on retirement on marriage, and their action has led to well-reasoned protest. Our plea (see THE LANCET, Oct. 7th, p. 812) for academic freedom for university workers in all countries has here a native application.

IRRADIATED ERGOSTEROL IN CLINICAL MEDICINE

THE therapeutic use of irradiated ergosterol for human patients has always met with a certain amount of opposition, partly because it is not a natural product, and partly because it is undoubtedly capable of producing specific pathological lesions when it is given in very large doses. Whether these lesions are due to vitamin D itself or to other products of irradiation is still disputed, but DALE and co-workers[1] have shown convincingly that pure calciferol administered to dogs in very large doses has the same toxic properties as the impure mixed products of irradiation. This suggests that it is impossible to produce a vitamin-D preparation which will not be toxic if given in overdose; but there is of course no reason why an overdose of irradiated ergosterol *should* be given, any more than an overdose of any other active drug. The value of a preparation of irradiated ergosterol can be accurately established in international units of vitamin D, by a biological test, and the material is so concentrated that a large batch can be evaluated with a single test. Cod-liver oil, on the other hand, can only be evaluated biologically in comparatively small batches, so that either repeated tests have to be made or else the value of a number of batches has to be taken on trust. Of other "natural" alternatives, the latest and perhaps the cheapest is sun-irradiated yeast, which Dr. DAGMAR WILSON has been using in India. But the reports on pp. 919 and 920 show, incidentally, how very different may be the potency induced in two different samples of yeast by exposure to the same Indian sun. An English distillery yeast developed a vitamin-D potency at least 40 times that which could be evoked in yeast from an Amritsar distillery. No explanation is offered; the Amritsar yeast (also used by LUCY WILLS and found poor as a source of B-vitamins) may have been much diluted with inert matter. The reason is not very important; but the fact remains that two batches of ostensibly similar natural material behaved quite differently after exposure to the same sunlight.

Our present issue also includes an account of clinical trials of pure irradiated ergosterol (calciferol) in human rickets, and Dr. J. C. SPENCE, who submits the report to the Therapeutic Trials Committee, should receive much credit for his successful circumvention of the pitfalls with which a test of this kind is beset. Owing to seasonal variations of light and diet, the observations must be adequately supplied with negative controls, or no one will pay serious attention to the results. The establishment of such controls, especially where the patients are treated at home and not institutionally, presents its own set of difficulties. A well-known radiologist in Vienna once distinguished two types of healing in rickets—the "in-patient" and the "out-patient" types. In the former, healing went straight ahead, from the appearance of the first line of calcification, whereas in the "out-patient" type healing meandered on, with alternating periods of relapse, clearly evident in the radiograms. The two types depended of course entirely upon the differing regularity with which the cure was taken, and Dr. SPENCE is to be congratulated upon obtaining "in-patient" healing in such a series of out-patient cases. He is also to be congratulated on securing so excellent a set of cases—though the existence of florid rickets among so many children over one year of age, in unemployed families, is a grim comment on recent pronouncements about malnutrition. The successful issue of his observations shows irrefutably that calciferol cures human rickets in doses of 3000, 6000, and 9000 international units of vitamin D daily. Since there is no apparent difference in rate of healing between the lowest and the highest dose, nor between these and a standard of optimal healing established by intensive treatment of a few cases, it is obvious that even 3000 international units daily must be more than the *minimal* curative dose, the actual size of which it would be advantageous to know in order that the margin may be made as wide as possible between it and the minimal toxic dose. Both of these will obviously vary with the other constituents of the diet.

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[1] Dale, H., Marble, A., and Marks, H. P.: Proc. Roy. Soc. B., 1932, cxi., 522.

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Both in annual and capital expenditure Dr. McIntosh finds strong ground for coördination. Economies, he suggests, would be easier to make if a thousand beds formed part of one organisation than if they were contained in ten independent units; and the importance of basing capital expenditure upon an ordered policy of development is significantly indicated by the disbursement of £400,000 on this head by the Liverpool voluntary hospitals in the last five years. One of the results of this capital expenditure has been the addition of more than 200 beds to the voluntary hospitals provision and of over

£20,000 to annual outgoings, and the process is continuing. Dr. McIntosh takes it as certain that if this huge sum had been spent as part of a general plan instead of the hospitals acting independently more could have been obtained for the money, probably with greater economy in annual expenditure. Moreover, he considers that, had concentration and the closing of a number of small hospitals been aimed at five years ago, the £400,000 would probably have sufficed to build a new and fully equipped institution of 500 to 600 beds, at the new rate of £800, or less, per bed. He adds a useful warning against increasing the number of beds beyond income possibilities and poses the question whether some of the city's hospitals are not so out of date and unduly expensive that they should be closed, but recognises that the restricted sites of most of them forbid enlargement of those that would remain. Nor is it money alone that might be saved by coöperation and organisation. Efficiency and avoidance of the duplication of effort are at least equally important. It is clearly wasteful that a leading Liverpool hospital should have a gynæcological and maternity ward when, close by, there are both a large women's and a large maternity hospital. Here and there some degree of coöperation exists, but the individualistic spirit is "quite robust." Empty beds in one hospital and a long waiting-list at another create a situation which makes the worst use of existing facilities. Again, while recognising the paramount necessity of testing new methods of treatment—and it is only in the hospitals that they can adequately be tested—Dr. McIntosh regards it as a waste of money and energy for every hospital to experiment with them simultaneously. All this emphasises the cardinal importance of concentration where it is practicable and where it is not of the grouping of general and special hospitals. But Dr. McIntosh's ideal scheme, apparently not necessarily limited to Liverpool, would be to sweep away all or most of the existing hospitals and concentrate the beds in one or two large hospitals. and he gives an impressive series of reasons, economic and medical, upon which it is based. The most weighty of these reasons is that a hospital of this kind would form a complete unit containing medical, surgical, and special beds in suitable proportions and would ensure the ready coöperation of physician, surgeon, and specialist.

Whatever differences of opinion there may be about this ideal or about Dr. McIntosh's detailed suggestions, the fruit of an exhaustive examination of the hospital position in Liverpool, there will be general agreement with his conclusion that the case for organisation is overwhelming. This verdict would have no restricted application to Merseyside. It has its value for every large town with several hospitals of varied character. In their respective degrees those towns are, broadly speaking, as much in need of collective thinking as Liverpool. The day of the isolation of voluntary hospitals has passed, but, since needs and circumstances vary, it may not be possible or desirable for the coöperation that is now called for to take the same form everywhere.

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ALICIA ADÉLAÏDE NEEDHAM

Mrs. Alicia Adélaïde Needham has the recognised position of the greatest Irish woman musical composer of her day, and her work asks for recognition from many besides musicians. And her country must be proud of her even when the sentiments behind much of her work are not reflected in parts of Ireland. Her songs and song-cycles, marches, and hymns are of a patriotic nature. She has acted as a conductor of British military bands and was the winner of a prize for the best song in honour of the coronation of King Edward VII. Mrs. Needham is now in indifferent health, and many lovers of music have resolved to show their appreciation of her talents by presenting her with a testimonial. The fitness of publishing this information to medical readers lies in the fact that she is the widow of a medical man, and is strengthened by knowing that countless babies have been put to healthy sleep to the sound of her lullabies. The request for subscriptions is signed by, among others, H.R.H. Princess Beatrice, the Archbishop of Armagh, and Sir Hamilton Harty, the well-known Irish composer and conductor. Subscriptions should be sent to Dr. J. S. Crone, J.P., High Sheriff of Middlesex, at 39, Grosvenor-place, S.W., the headquarters of the Irish Literary Society.

PURE WATER IN MALAYA

MOST of the drinking water in the Federated Malay States is derived from jungle streams, which—in a country where the drier districts have an annual rainfall of about 85 inches and one mountainous district as much as 245 inches—yield in general ample supplies. But the character of these waters is remarkable, as seen in the light of a survey[1] made by Mr. R. W. Blair, chief chemist at Kuala Lumpur. Containing less solid matter and usually less salt than high upland water does in this country, with very little of the nitrogenous organic matter or oxidised nitrogen characteristic of sewage, they are evidently rather heavily charged with vegetable matters, and those that have been bacteriologically examined usually contain coliform organisms in as little as one-tenth c.cm. The high average temperature, which, however, seldom reaches 90° F., is no doubt favourable to the survival of this organism, but it must be presumed that the jungle tribes of men or beasts must be rather more numerous than is commonly supposed to account for the high bacterial content. It is to the credit of the States authorities that many of these waters—even those supplying small places like Gemas, in the State of Negri Sembilan, with 2475 inhabitants—should be sedimented, filtered, coagulated with alum, and chlorinated. This town receives 40 gallons of water per head per day. Kuala Lumpur itself, a city of 120,000 inhabitants, has a supply equivalent to over 80 gallons per head per day. The water for this town is collected from jungle streams from forest catchment areas specially protected as waterworks reserves. Although a majority of samples of raw water yielded with one-tenth c.cm. organisms producing acid and gas in primary lactose peptone bile salt medium, over 80 per cent. of samples of final chlorinated filtrate yielded negative results with 100 c.cm. It seems, indeed, that the drinking water in this distant group of native States under British protectorate is better looked after than that of many of our English villages and small towns.

OF INTEREST TO HOSPITAL RESIDENTS

Messrs. R. B. V. Currie and Co., accountants, of 92, Victoria-street, London, S.W., inform us that they have recently won an income-tax appeal before the General Commissioners at Holborn on behalf of a medical officer resident in an institution. The case was as follows :—

> Dr. A. B. was employed by the London County Council as senior assistant medical officer of a fever hospital, and was required by the terms of his employment to reside within the precincts of the hospital and to pay to the Council charges totalling £79 10*s.* 6*d.*, made up as follows : rent, £55 ; rates, £19 10*s.* 6*d.* ; hot water, £5. These charges were included in his assessment for income-tax. On appeal, the General Commissioners decided that A. B. was entitled to that sum as a deduction from his assessment to income-tax on the ground that : (1) residence within the precincts of the hospital was one of the duties required to be performed ; (2) the expenditure of £79 10*s.* 6*d.* was incurred by reason of such imposed residence ; (3) the items of expense of £79 10*s.* 6*d.* were moneys expended wholly, exclusively, and necessarily in the performance of his duties.

The Crown are appealing to the High Court to have this decision reversed, although on the face of it, being a decision of fact, there should be no appeal. The question is one which interests a considerable number of medical officers similarly employed. Messrs. Currie and Co. state that Dr. A. B. does not feel able to bear the costs of fighting the test case in the High Court, the amount required, in case he loses, being estimated at £50 or £60. This sum would not, of course, include the costs of taking the case to a superior court. If the decision of the Commissioners is ultimately upheld, relief in respect of expenses similarly incurred would be retrospective for six years. In order to prevent the benefits of the decision being thrown away Messrs. Currie and Co. have opened a guarantee fund on behalf of Dr. A. B., to which they suggest that others in like case might be glad to subscribe.

THE RETIREMENT OF SIR ALEXANDER HOUSTON

AT the last meeting of the Metropolitan Water Board the retirement of Sir Alexander Houston, the Director of Water Examination, was announced as immediately impending. Recently the Board had arranged that Sir Alexander's services could be retained until September, 1934, but he has himself decided that, owing to the state of his health, he must ask the Board to allow him to retire as from the end of the present year.

Sir Alexander Houston entered the service of the Metropolitan Water Board in 1905, following upon the establishment of the central laboratory which placed upon the Board the express duty of making arrangements for chemical and bacteriological examinations of and experiments as to the condition of the water to be supplied by them. For 28 years, therefore, the water examination department has been under his guidance, and our readers will have gathered from our annual analysis of his reports in how many directions his researches have solved problems relating to the protection of water-supply and the securing of its purity. "It can be safely said," runs the official report of the Water Examination Committee, "that Sir Alexander is pre-eminent in water purification matters and there can be little doubt that his world-wide reputation as an expert has lightened the grave responsibilities of the Board as regards the safety of the metropolitan water-supply, and tended to create a sense of security among those who watch over the health of the metropolis." The Committee recommends that the Board should place on record in suitable form the formal acceptance of Sir Alexander's resignation, including the following words: "That the Board do place on record their high appreciation of the eminent, zealous, and devoted services rendered by the Director of Water Examination, Sir Alexander Houston, K.B.E., C.V.O., M.B., D.Sc., LL.D., F.R.S., to the cause of London's water-supply during the past 28 years, and their sincere hope that relief from his arduous duties and responsibilities will result in such an improvement in his health as will enable him to enjoy for many years the rest he has so abundantly merited."

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[1] Institute for Medical Research of the Federated Malay es, Bulletin No. 2 of 1933.

CERTIFICATION OF BLINDNESS

THE latest circular of the Ministry of Health addressed to all authorities under the Blind Persons Act endorses a report recently issued[1] by the Prevention of Blindness Committee appointed by the Union of Counties Associations for the Blind. In the circular are two main recommendations. The first refers to the qualifications of the medical practitioner by whom persons claiming the privileges conferred by the Blind Persons Act are to be certified. Many local authorities have so far come into line as to adopt the Ministry's previous recommendation that the certifier should be "a medical practitioner with special experience in ophthalmology." The importance of this has been widely recognised.[2] The somewhat vague criterion "so blind as to be unable to perform work for which eyesight is essential," and the existence of very numerous borderland cases, whose visual acuity may be something between 3/60 and 6/60 with fairly full visual fields, leaves a good deal to the judgment of the certifying surgeon. In many districts in Scotland a system has been adopted, on the initiative of Glasgow, by which every case is examined by two experts who have both to sign the certificate. Without going so far as this the Ministry now recommend that local authorities should, "as far as possible," aim at securing that all certification be undertaken by a medical practitioner who devotes his or her whole time to the practice of ophthalmology in all its branches, or who is in charge of the ophthalmic department of a general hospital of not less than 100 beds; failing such practitioner, one who holds a recognised diploma in ophthalmology. The exact wording here was suggested by the professional members of the Prevention of Blindness Committee.

The second point in the Ministry's circular refers to the certificate itself. A form founded upon that used in Scotland and recommended by the aforesaid committee is now endorsed, both by the Ministry of Health and by the Board of Education, who now urge all certifying and education authorities to use it. It is a somewhat elaborate document calculated to reveal the exact grounds on which the diagnosis of blindness is based, the causes which have produced it, a forecast of any possible improvement in the condition, and in the case of children under 16, the recommendation of the certifying surgeon as to whether the child is likely to benefit more from education in a special school for the partially blind or in an ordinary school for the blind. The object of the detailed statement required is (1) to provide for the proper certification of the individual, and (2) to secure statistics of the causes of blindness likely to be of service to the specialist subcommittee of the Prevention of Blindness Committee, which is willing to examine and classify the information so obtained. In the case of children under 16 special clauses in the certificate are designed to guide the education authorities. It should be remembered that for educational purposes the definition of blindness now in use is "too blind to be able to read the ordinary school-books used by children"; it does not follow that a child of school age certified as blind for educational purposes need be blind in a stricter sense of the term.

ENCEPHALITIS IN ST. LOUIS

A SPECIAL meeting of the St. Louis Medical Society was held on Sept. 1st, to consider the problems raised by the serious outbreak of encephalitis in the neighbourhood,[1] and the report published in a special number of the society's *Weekly Bulletin* (dated Sept. 22nd) supplements in many respects the information already available. The history of the earliest cases given by Dr. William G. Patton recalls to mind experiences in this country in 1918. The first patient was a negro, admitted to the St. Louis Hospital on July 23rd, 1933, with headache and pyrexia. No history could be obtained, for he became comatose shortly after admission; but there was marked rigidity of the neck, with a positive Kernig's sign and toe extension, he had definite signs of pulmonary tuberculosis, and lumbar puncture showed increased pressure and a cell count of 180 with 70 per cent. lymphocytes. The tentative diagnosis was tuberculous meningitis. While he was still in hospital a white woman was admitted with almost the same clinical picture and the history that her husband was suffering from tuberculosis. Before the negro died, however, the woman began to improve, and another woman similarly affected was admitted. When the autopsy on the negro showed no tuberculous meningitis, it was realised that an outbreak of encephalitis was the probable explanation of the three cases. During the next two days about a dozen more were admitted, and subsequently they became so numerous that it was necessary to accommodate them at the Isolation Hospital.

Dr. P. J. Zentay, who contributes a historical review of the disease, suggests the following classification :—

I. *Epidemic encephalitis.*—(1) Type A, or Economo or lethargic type. (2) Type B: (*a*) Japanese form; (*b*) Australian form; (c) Spokane, Washington form; and (*d*) St. Louis form.

II. *Post- or para-infectious encephalitis.*—Many different types.

Dr. J. F. Bredeck, writing on epidemiology, shows that the disease has been endemic in St. Louis during the past three years. The first 13 cases of this outbreak appeared within 19 days. At the time of writing, out of the 421 families in St. Louis city and county only three or four had had more than one case, and in some of these the onset of both cases was on the same day. In only one or two was there any definite association with another patient. Most of the cases, he says, occurred in the suburban areas, and they were not limited to any particular locality. As possible ætiological factors he discusses climatic conditions and the excessive number of mosquitoes this year, but he finds no evidence as yet of insect carriers being concerned—indeed there are many points against such a possibility. On the pathological side Dr. Howard A. McCordock gives some account of the findings of the present outbreak, which include, on naked-eye examination, an intense congestion of the gray matter, with pink blotches in the pons, medulla, or basal ganglia, on section. Microscopically there are occasional petechial hæmorrhages, perivascular cuffing, and also small foci of cells scattered through the brain substance without any relation to vessels. There is considerable destruction of nerve cells. In very acute cases similar changes are also found in the cord. On the basis of 127 cases in the Isolation Hospital, Dr. John W. Eschenbrenner is able to give a detailed description of the clinical features of the illness, and emphasises particularly mental dullness and disorientation, particularly as to time. Many patients have a mask-like appearance and staring look, sometimes accompanied by mild transient facial palsies, but ocular palsies have been very rare. Headache and stiffness of the neck are common, and recovery, when it occurs, is surprisingly rapid. The report also contains detailed papers on the diagnosis and treatment by Dr. L. P. Gay, the complications and sequelæ by Dr. G. O. Broun, the neurological aspect by Dr. Andrew B. Jones, and the ætiology by Dr. R. Muckenfuss. It is obvious that the time has not yet come to make any dogmatic statement about sequelæ, but it is noteworthy that in one case early Parkinsonism was suspected. On the other hand, it is satisfactory to find that almost all those who have been discharged from hospital have appeared perfectly well, and as one of the speakers rightly puts it, "no one is justified in saying that they will or will not have complications later."

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[1] See THE LANCET, July 22nd, p. 191.

[2] Ibid., 1932, i., 195.

[1] See THE LANCET, Oct. 7th, p. 811.

Apart from the intrinsic value and interest of the material which this special number of the society's journal contains, it points to a coöperation between the branches of the profession concerned which is both stimulating and encouraging. This is the team spirit at its best.

THE HOLISTIC PHYSICIAN

IN choosing a title for his address on Oct. 12th, as new chairman of the Medical Society of Individual Psychology, Dr. J. C. Young borrowed the term "holistic" from Smuts, whose philosophy, he said, is almost identical with that propagated by the society. His remedy for the widespread dissatisfaction with the modern trend of the profession—particularly the tendencies to commercialism and over-specialisation—is a holistic medicine based on the recognition of the patient as a whole or individuum. There is urgent need, he said, for a clarification of the canons of medical practice and for attention to the psychological factors in disease, more especially those allowed to lapse into chronicity because they do not fit into a diagnostic category. Disease is a dissolution of the whole into parts or opposites, and in this dysharmony a faulty "life style" and defective emotional control are more potent than bacterial invasion. But the accumulation of pathological and clinical knowledge, in Dr. Young's opinion, has become an end in itself, no longer concerned with human betterment. The human being if treated as a mechanism will behave as such, and the doctor's aim should rather be to increase awareness and to avoid all methods which encourage a habit of disease. An increased self-awareness, he thought, would bring immunity from most ignoble diseases, and by way of illustration he described three cases of mucous colitis and three of epilepsy treated on holistic lines. In the epilepsies we are concerned with the incoördinated and unadapted strivings of the patient, and a fit of temper, violence, or the "blues" may be considered on a similar basis; what is common to all is frustration and a regression to instinctive and impulsive behaviour. The holistic physician, said Dr. Young in conclusion, must abandon other laurels and become so aware of himself as to be understanding of those who seek his aid.

THE ANTI-NOISE LEAGUE

WE publish a letter signed by Mr. Beckles Willson, as hon. secretary, announcing the formation of a new association, designed to combat the cruel infliction on the public constituted by the uncontrolled noises in our streets. The letter points out, without exaggeration, the chief sources of street noises, and it needs no words to show that in their professional life no class is more persecuted by them than doctors; they suffer in the carrying on of their work, and that work is aggravated by the suffering of their patients. The new movement should have a strong medical response, but it is probable that many subscribers will be needed to secure effective action, as the aid of Parliament will have to be invoked.

Prof. Edward Mellanby, secretary of the Medical Research Council, will deliver the Lloyd Roberts lecture of the University of Manchester, at the St. Mary's Hospital, Whitworth-street, Manchester, at 4.15 P.M., on Tuesday, Oct. 24th. His subject will be Nutrition and Child-bearing.

THE Bradshaw lecture of the Royal College of Physicians of London will be given on Nov. 2nd by Dr. C. S. Myers, F.R.S., whose title will be a Psychological Regard for Medical Education. On Nov. 7th and 9th Sir Humphry Rolleston is to deliver the FitzPatrick lectures on the history of the endocrine organs; and on the 14th Dr. W. G. Savage the Mitchell lecture on human tuberculosis of bovine origin. All these lectures will be given at 5 P.M. in the College, Pall Mall East, and will be open to any member of the medical profession on presentation of a visiting card.

AT a meeting of the court of the University of Glasgow last week, it was announced that £20,000 had been given by Miss M. D. Rankin, of Greenock, to provide a fund for medical research. Miss Rankin has asked that the claims of cancer investigation should receive special consideration, but the fund is to be available for any kind of inquiry into the origin and curative treatment of disease. The fund will be administered by an executive committee consisting of the principal of the University, the professor of pathology, or the St. Mungo (Notman) professor of pathology; the Regius professor of physiology or the Gardiner professor of physiological chemistry, the Gardiner professor of bacteriology, or the Henry Mechan professor of public health, and two other persons to be nominated by the university court.

THE PREVENTIVE ASPECTS OF MEDICINE

The second of a series of twenty lectures to be delivered on Thursday afternoons during the winter session at King's College Hospital Medical School is printed in full below. It is our intention to publish subsequent lectures in this series.

VENTILATION, SUNSHINE, AND CLOTHING

MOST significant experiments in regard to the prevention of disease were carried out by Sir Robert McCarrison in the Nilgiri Hills. He studied the life-history of thousands of tame albino rats which were kept under excellent conditions, with good ventilation, plenty of light, and clean dry bedding. The rats lived and bred in comfort, and after two years of life, corresponding to 40–50 years in man, were killed off, so troubles due to old age were excluded. Some of these rats were kept on a diet similar to that eaten by vigorous races of northern India—viz., whole meal, fresh butter, milk, sprouted legume, raw carrots, and cabbage ad lib., a small ration of raw meat and bones once a week, and abundance of water for drinking and washing. In these rats no case of illness and no deaths occurred, except a few accidental ones, and the infant mortality was nil. In nearly 2000 macroscopic post-mortem examinations no sign of disease was found other than an occasional cyst in the liver due to tapeworm larvæ.

Another set of rats were kept under similar environmental conditions, except each had to be put in a separate cage so that infection should not spread. These rats were fed on an ill-balanced diet, such as that in common use in cities—e.g., white bread, margarine made from vegetable fat, sugar, jam, preserved meat, and scanty over-cooked vegetables. This batch of rats suffered from a large proportion of the diseases included in the list of human ailments. In them all the common inflammations of the various organs occurred; post-mortem examination of over 2000 showed most of the morbid states commonly found in man. Guinea-pigs, rabbits, pigeons, and monkeys were similarly tested, and the conclusion reached that properly fed animals remain remarkably free from disease, while improperly fed animals, however well kept, are remarkably subject to it.

Experiments by various observers have shown, however, that young animals kept on a diet seriously deficient in vitamins, but not wholly deficient, may make good if exposed to open air and sunshine, while animals (and these may be from the same litter) kept indoors in dim light grew up stunted and weakly. Debilitated, rickety children taken from slums and well fed and clothed, and put to sleep in open-air shelters, and play in the open air, have likewise been made robust, happy, and teachable, and this during the winter without any artificial heat other than that used for warming food and drying clothes. Be it noted this has happened not only for children under the care of Rollier in the splendid winter conditions which pertain at an alpine health resort, but also in a Lancashire city where rain and fog are prevalent.

THE INDOOR ENVIRONMENT

Let us now turn to the consideration of the indoor environment. Many people still think that they are made tired and uncomfortable in crowded rooms by want of oxygen and excess of carbon dioxide, and that the smell of such a room betokens the presence of a volatile poison. And yet 50 years ago Angus Smith, shut in a chamber, breathed for 20 minutes nearly 4 per cent. of carbon dioxide without harm. While, as Billings pointed out, air containing as much as 1½ per cent. of carbon dioxide was commonly breathed by healthy workers in breweries and mineral water factories. So great is the natural ventilation set up by differences of temperature inside and outside a crowded room, that, even when doors and windows are shut, the chinks allow enough air to pass to prevent any significant alteration in the chemical composition of the air. Such alteration only occurs in hermetically closed places—e.g., submarines, sewers, and mine galleries. Men have voluntarily stayed under water in submarines until the oxygen has sunk below 17 per cent., when a match will not light nor a cigarette burn, and the carbon dioxide has risen to 3 per cent.; even 5 per cent. has been endured. The sea water outside keeps the air cool, and anyone entering such a submarine when it came to the surface might think the air fresh. In the depths of the lungs there is naturally about 5 per cent. of carbon dioxide and 14 per cent. of oxygen, and the breathing is automatically so arranged as to keep these amounts constant. This control fails only on going to high altitudes. The small differences which occur in a crowded room—e.g., less than 0·5 per cent.—are then of no consequence. There is less oxygen in each pint of air at an alpine health resort (5000 feet up) than in such a room. Men go to heights and then become acclimatised where the air is so thin that each pint of air breathed contains only half the normal amount of oxygen. There are towns placed some 15,000 feet up the Andes, and shepherds take their flocks up to 18,000 feet on the slopes of the Himalayas. Everest climbers have gone 10,000 feet higher, to where the amount of oxygen is about one-third of the normal. But these men require strong hearts, plenty of red blood, big lungs, and deep-breathing power, and then may have to take ten breaths in order to make one step. With an efficient self-contained oxygen breathing apparatus the climb of the last 1000 feet would not be over-difficult. The flyers, using oxygen, have successfully surveyed the summit. The breathing of pure oxygen allows man to fly some 44,000 feet high where the barometric pressure falls to 115 mm. Hg.

The theory that a volatile poison is exhaled and affects people in crowded rooms was based on experiments made with liquid condensed out of the breath. This liquid was contaminated with saliva, and animals injected with it were sensitised to the foreign protein in the saliva, and when used again succumbed to a second dose by anaphylactic shock. Attempts to prove the existence of such a volatile poison have wholly failed. People love to seek mysterious explanations of simple things, and in place of the volatile poison theory much has been made recently of deionisation or hyper-ionisation of the air. C. P. Zaglau and his co-workers have actually found that air becomes deionised by the presence of people in a room, but no evidence has been forthcoming that a change of ionic condition affects the feelings or physiological functions. The discomfort felt in crowded rooms, in truth, arises through interference with the normal loss of body-heat and moisture. One is braced on the East Coast on a summer day by losing heat by radiation to the cold surface of the sea and by convective loss to the wind, particularly when this comes off the sea and blows over the cliff edge—exerting a strong cooling effect. Sheltered from the wind within a greenhouse a few yards from the cliff edge one may feel the conditions stuffy and relaxing, for the long infra-red rays given off by the sun-heated objects inside are retained by the glass. The shorter wave-lengths of the infra-red rays penetrate the skin, as the red rays do, deeply, while the visible rays other than red and the longer ultra-violet rays do not penetrate beyond the blood in the skin, and have their energy changed into heat or chemical action therein. The shortest ultra-violet rays of sunlight produce sun burn. They penetrate as far as the living cells of the epidermis, and scarcely to the most superficial capillaries in the derma; by their action on ergosterol present in the fat of the living cells vitamin D is produced, which protects against rickets.

The fact that adequate exposure of infants and children to the sun prevents rickets and all its attendant troubles is one of the great discoveries of modern medicine. Rickets can also be prevented by giving vitamin D in food, and irradiation of foodstuffs is now being carried out to effect this end. The vitamin, separated as a pure crystalline product, affords protection when given in immensely small doses. The active ultra-violet rays are also held to be of great value in curing many cutaneous infections and wounds, and in fighting tuberculosis, both pulmonary and surgical. As a preventive measure facilities for sun-bathing in the summer and artificial sun-bathing in the winter should, in my view, be made just as available to all as is a pure water-supply.

In contrast to the short, the long infra-red rays have no penetrative power and are absorbed by the surface of the skin; heat is thence conducted inwards. The short rays excite flushing of the skin and transpiration whence arises a pleasanter sense of heat. When the dry cool skin is first exposed to a source of long infra-red rays a feeling of prickly and scorching heat may result. Cool air from a fan, or the loss of radiant heat by the skin to cold surfaces, among other conditions, lessens these unpleasant effects. Modern gas fires have been made brighter in order to afford a more pleasant form of heat. Dull red electric fires should also be made brighter, and all artificially heated rooms should be abundantly ventilated with cool air.

HEAT-STROKE AND ITS AVOIDANCE

Under ordinary cool conditions most of the body-heat is lost by radiation and by convection, the loss by evaporation in comparison being insignificant. Relative humidity is not directly correlated with evaporative loss because the body warms up any stationary layer of air in contact with it, and saturates it at skin temperature. The important factor is the physiological saturation deficit—that is, the difference between the amounts of water held in the air at room temperature and when saturated at skin temperature. It makes no difference then whether the relative humidity is 50 or 75 at ordinary room temperatures. Sweating comes into play when cooling by radiation, by convection, and by insensible perspiration does not suffice to keep the body temperatures normal. Increased ventilation with cool air and removal of clothes are the obvious means of relieving warm conditions. The construction and ventilation of factories should be such that these conditions do not arise, then greater efficiency, better health, and content will follow. In a South African gold mine it was observed that miners did 50 per cent. less work in hot galleries than in places where the cooling power, as measured by the katathermometer, was brought up to the standard set by me. The effect of stripping off clothes is great, and custom should allow workers to adapt their clothing to working conditions. When a man works in hot moist air his body becomes overheated and his pulse rapid. When the pulse reaches about 130 he must cool off, or run the risk of heat-stroke. People who are ill may lose the power to sweat and die of heat-stroke in hot weather. This mishap can be easily prevented by putting a wet sheet on the patient and setting a fan to blow on him, thus *artificially cooling him by evaporation.* Very high temperatures can be endured so long as the air is dry, but exposure to air which is saturated, and above body temperature, puts an end to control. In the Black Hole of Calcutta and similar notorious cases death occurred not, as has been generally supposed, from suffocation but from heat-stroke. In furnace rooms and mines there must be sufficient change of air to cool the body by evaporation and sufficient drinking water to keep up the loss by evaporation; the water should be slightly saline to prevent cramps, which result from excessive loss of salt in the sweat. A man working in a very hot place may drink as much as three gallons in a day. During last summer the lives of some valuable greyhounds and leopards were lost during transit in their travelling boxes. These animals were not suffocated, as was supposed, but died from heat-stroke, due to heating of their boxes by the sun rays. In 1916 in a train crossing an Indian desert there occurred 136 cases of prostration among 1026 soldiers, and 15 died of heat-stroke. There is no danger of sunstroke arising through not wearing a hat in this country, but heat-stroke has to be guarded against—e.g., in soldiers fully equipped, marching in close formation along sheltered sun-heated roads. Just as we need refrigerators for food, so refrigerated rooms are really wanted for workers in hot climates. In the provision of these engineers should find a new and profitable line of business. Houses in the tropics should be orientated to catch the wind and built with wide verandahs, thick walls, and double roofs with a *circulating air space* between. Clothes should be white to reflect and scatter the sun rays, and made loose and flapping with wide openings to allow free ventilation. People who suffer from rheumatic pains are usually sensitive to changes of weather, and some think their aches vary with the barometric pressure. So long, however, as the pressure is equally distributed all over the body, as with a diver or airman, it has no mechanical effect. I have watched a man, who breathed oxygen, being decompressed in a chamber till the pressure fell from about 760 mm. to 115 mm. Hg, equivalent to a rise to a height of 44,000 ft. to which height Capt. Uwins has flown. At 115 mm. Hg the oxygen tension became too low to keep the man fully conscious, and his writing became disordered. I have also watched an Admiralty diver go to a depth of 347 ft. where the air pumped into his dress equalised a pressure of water outside of nearly 12 atmospheres. Sensitivity to weather has to do not with barometric pressure but with changes of temperature, cooling power, and humidity. Heat relaxes tissues and brings more *blood and lymph* into them and so relieves pain, while cold, by tightening up the tissues, may increase the pressure on nerve-endings. Humidity, by lessening the insulating power of the horny layer of the skin, increased the feeling of chill, while winds cause draughts and increase the cooling power. Most people still believe in the danger of draughts. Many experiments have, however, been made on healthy men. These have stood nude in cold draughts, even after hot baths, and have had cold air blown from a fan on their naked bodies, and no significant evidence has been obtained that colds and pneumonia are caused. The stripping off by women of most of the clothing worn in the Victorian age has only resulted in their improved health and vigour. During the late war, men in the trenches, and on ships in the North Sea, were exposed to cold and damp to the utmost degree of discomfort, but caught "colds" only when they returned home on leave. The native soldiers brought from India were at first incapacitated as fighters by cold, but they did not die from pneumonia or rheumatic fever, and finally, with the help of good food and clothes, won through to acclimatisation and efficiency.

THE CONTROL OF EPIDEMICS BY VENTILATION

In the middle of last century diseases such as typhus fever, typhoid, dysentery, and diphtheria were attributed to noxious vapours arising from marshes or sewers. Bad drains were suspect because no other cause appeared. It is 50 years since J. S. Haldane showed that sewer air was more free from organic matter and microbes and in better condition than that of schools or houses. We know now that these diseases are of microbic origin, and spread by human carriers, who contaminate milk or water, or through the bites of insects. Forty years ago, through the work of Patrick Manson and Ronald Ross, proof was given that malaria is spread by mosquitoes and with this discovery there toppled down the theory that the breathing of marsh air and night air is the cause of fever. We know now that the chill felt before the heat of fever is not the cause of the fever but the shivering stage which ushers in the infection. And yet to this day children are kept indoors in air polluted with house dust and microbes for fear of their catching cold. It is indeed difficult to overcome the tradition of ages. It was shown in barracks in the Crimean war that the incidence of disease and mortality was much higher among men living in badly ventilated than among those in well-ventilated quarters. But opinions move slowly, and experience was needed to prove again in the late war that soldiers in open tents and shelters suffered least from infectious disease, and that the wounded did far the best in open-air wards. Only recently Surgeon Captain S. F. Dudley has collected evidence from naval schools which shows that the best method of preventing infectious disease is to spread apart the beds and open the windows of dormitories. We have moved a long way from the time when consumptives were advised to sit in crowded schools in order to breathe in the vigorous health of the young. It is 50 years since Emmerich traced epidemic croupous pneumonia to microbic infection arising from the filth which collects under the skirtings and between floor boards of dirty houses. To such filth may be traced the low infections of ill-fed tenement dwellers. Primitive men made a wigwam of boughs, and moved on to fresh quarters and unpolluted soil and water. We spend millions on drainage, provision of clean water, and cleansing of streets and courts, but still have people living in polluted houses and wearing filthy clothes. In respiratory diseases infection is spread by droplets of saliva which are sprayed out in sneezing, coughing, and explosive speaking. Out of doors air moves on the average 12–15 feet per second, and air moving only 5 feet per second, a just perceptible breeze, ventilates the space occupied by a man some 50 times more than the amount which is supposed to be satisfactory in a room. In the vast restlessly moving air out of doors infection scarcely ever occurs. At Papworth Colony, owing to an open-air life, none of the children of tuberculous parents have become infected. In tenements, on the other hand, the infection of young children who live with a tuberculous parent is common and often fatal. Guinea-pigs become infected when kept in cages near to a patient who, suffering from tuberculosis of the lungs, coughs up sputum, that is when the room is kept shut up; when windows and doors are kept wide open they escape. A medical officer of health told me of a children's home run on old-fashioned lines; there was much sickness, and the doctor visited the home every day. An additional home with open-air dormitories was then built. To this home the doctor came once a month, and then had nothing to do. Another home was added with like result. Then someone with the old-fashioned fear of cold got control of the committee, and a fourth home was built on the indoor plan; herein the sickness was as high as in the first home. What a lesson for committees of management and architects. Schools as at present built and run are too often places which, while improving the manners and sharpening the wits of children, spread infection; and so when holidays are at end the colds begin to run around. Schools should be built on the open-air plan, and warmed by radiant heat, and exercises or games should be given every half-hour to keep the children warm and lively. They must have enough food, and as much cool air should be put through the room as will just not cause an uncomfortable draught. Whenever an infectious disease, such as influenza, goes round, slightly infected people, who may not be at all ill, act as carriers; others, who have recovered, may continue to act as carriers. Thus infection cannot be stopped by isolation of the sick; but it can be enormously reduced by good ventilation. Sailors on warships sleep below deck crowded together, but the air is changed every two minutes by fan ventilation; given plenty of exercise on deck by day they keep healthy in spite of crowding. The cubic space of a room is of no importance; it is the ventilation which counts.

Tuberculosis, formerly rife, has been practically abolished from the monkey house at the Zoo by giving the animals free roof ventilation, incandescent lamps to warm by in dull and foggy weather, warm, dry sleeping shelves, free access to open-air playgrounds, and natural foods to eat.

THE PERILS OF DUST AND SMOKE

The dusty, warm atmosphere of crowded rooms not only spreads infection but lessens the defence of the membrane which lines the breathing passages. Breathing cold outside air enhances the flow of blood through the membrane and the secretion of fluid from it, and so its cleansing mechanism is kept up. The secretion has a high power of killing microbes. Eyes water and noses run out of doors on a cold day, and this not because a cold has been caught but as a natural result of breathing cold air. The membrane defends itself from cold by a faster flow of arterial blood and by more secretion. In this partly lies the good effect of open-air treatment.

Some people are peculiarly sensitive to dust containing traces of foreign protein such as dandruff of animals, pollen, and moulds, and suffer from hay-fever, asthma, and bronchitis through breathing such dust. House dust contains moulds, particles of horse hair, wool, feathers, &c. A visit to clean alpine air relieves many people who are sensitive to dust. Storm van Leeuwen has provided such air artificially by condensing out moisture in a refrigerator and dust which goes with it. Sleeping in sterilised clothes in dust-free compartments ventilated with this pure air of uniform temperature, some asthmatic and bronchitic patients are said to be relieved and to be able to go about their work by day. In damp soils and houses moulds are far more abundant; by changing soil or house, or bedding, some asthmatics may be relieved. To reduce pollution of air with dust we must build and furnish houses more like hospital wards, clean them by oily mops and vacuum cleaners, and have abundance of ventilation.

The most mischievous of dusts is that of uncombined silica set free in the working of quartz, flint, sandstone, and granite; asbestos dust is equally pernicious. The inhalation of these dusts by workers slowly leads to degeneration of the lungs and tuberculosis, and a very high death-rate may result. Mining of quartz, granite, and grinding of tools on sandstones must be done with the aid of water sprays and dust extractors.

Not only is the air polluted in dwellings, but the light of the sun is cut out by buildings, clothes, glass windows, and by pollution of the atmosphere with dust and smoke. The economic loss due to smoke pollution is enormous. It leads to waste of fuel; waste of human energy in moving fuel and ashes; waste in production of artificial light; waste in washing and cleaning clothes and redecorating houses, and in repairing stone and metal work corroded away by acid-sulphur fumes; waste of green food which will not grow in smoky places, and consequent lessened milk production and diminished supply of vitamins; waste of time of workers in travelling and in transport of goods, a waste intensified by smoke fogs. The use of smokeless fuels, such as gas and coke, should be universal; the life of citizens will then be made far less drab and dirty, and their health will be improved by the beneficent action of the sun. By living an indoor sedentary life in warm, stagnant atmospheres, the heat production of the body is reduced to a low level and the fire of life is damped down. The respiration is shallow, the circulation of the blood less rapid, while the abdominal organs are not massaged as they are by deep breathing and active muscular movement. Little food is then required and appetite lessens, or too much is eaten and wrong kinds of fermentation may occur in the alimentary canal. Exposure to cold air out of doors may double the heat production of a man at rest, and hard exercise put it up five times or more, and swimming even 15 times, that is, during the period the exposure to cold and exercise lasts. A Channel swimmer who takes 24 hours to cross over may then put his metabolism to 15,000 calories and probably more. There is nothing more effectual for slimming.

The improvement of health and vigour seen in clerks, shopmen, and factory hands when enlisted for the late war, was due to their being well fed and trained in out-door exercises. Every sedentary worker can devote some of his spare time to open-air exercise. By discipline in simple rules of health life may be extended and joy in living obtained.

It is your duty to encourage him to do this; not only his health but his joy in life will certainly be increased.

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General Supervisor, the London Clinic and Institute of Physical Medicine.

POST-GRADUATE LECTURES

OUR last two issues have contained summaries of lectures delivered at the post-graduate courses lately concluded at London teaching schools. This week we report those of Mr. Broster (Charing Cross), Dr. Gardiner-Hill (St. Thomas's), and Mr. Muecke (London Hospital).

THE ACUTE ABDOMEN

(MR. L. R. BROSTER)

A RETROSPECTIVE study of our work is always a healthy pastime, and I thought this lecture would afford a good opportunity of "taking stock" on the subject of the acute abdomen, a subject which imposes so little margin of error and so grave a responsibility on the practitioner. Any impending catastrophe is a severe test of those qualities of character which it is our duty to cultivate, for apart from preserving a confident demeanour, a clear mind, and a calm judgment, we must in addition possess the courage to act, since in no contingency of practice are indecision and delay fraught with greater dangers.

The keynote of success is early diagnosis and prompt treatment. It is notoriously difficult to make an accurate diagnosis in every case. It is also an axiom: "When in doubt, operate." Consequently, the greatest possible attention should be paid to the question of diagnosis, of which the most important element is the accurate observation of the earliest symptoms, which no one more than the practitioner is privileged to see. By a process of careful induction and deduction a correct opinion can often be established, and operation can be performed, before the lesion is allowed time to develop and so become a menace to life. If these early observations are sound and definite then there is no excuse for temporising. It is often not sufficiently appreciated that in the evolution of acute disease there may develop a latent or quiescent period, in which there is a definite improvement in the symptoms and condition of the patient, but, being only of a temporary nature, it may lull our suspicions or make us blind to the serious nature of the underlying pathology. While recommending due care and attention in accurate diagnosis, it is only fair to warn you against the habit of what may be termed "spot diagnosis," which, like the "psychical bid" in contract bridge, most often ends with disastrous consequences. With regard to diagnosis there is no better foundation to build on than the application of our knowledge of anatomy and physiology, and to correlate with these our experience of the pathological and clinical processes involved.

Anatomical.—The abdominal cavity must be regarded as a chamber surrounded by voluntary muscles, directly controlled by their segmental nerves and indirectly via the sympathetic. Of these the most important are the diaphragm, the recti and lateral abdominal muscles, the psoas, obturator internus, and the quadratus lumborum. If irritated by an inflammatory lesion they become tender and rigid, and movement of their fibres gives rise to pain. As pain is an expression of the most valuable clinical importance, the abdomen may be compared with some kind of musical resonating chamber, the sounds from which it is our duty to interpret. These notes are not always tuneful. They may be true, sharp, false, or even dumb notes; there may be chords and discords, or only the echo.

Everyone is familiar with the board-like rigidity of the abdominal muscles in response to the escape of the highly irritating contents of the stomach or duodenum from the perforation of an ulcer. There is also flexion of the hip or pain on stretching the psoas when its fibres are impinged upon by a perinephric or appendix abscess; there is pain induced by flexing and rotating the thigh when the obturator internus is irritated by a pelvic abscess, or pain and a mass felt when passing the finger into the rectum. These are true notes. Our interpretation of chords depends upon the application of our knowledge of the distribution of the segmental nerves which supply these muscles, and also of their reflex connexions both visceral and somatic. For instance, I have seen a stone in the kidney with no pain (a dumb note), or with pain referred to the opposite side (false note), and with the typical pain felt behind, in front, or down the course of the segmental nerve to the testicle. Perhaps the best example of segmental and referred pain is found in the case of a lesion, such as cholecystitis, impinging upon the diaphragm, which is a muscle not amenable to direct palpation. Here the pain may be conducted along the ninth segment and felt at its anterior lateral or posterior branches, or be conducted up the phrenic nerve to the region of the fourth cervical segment and referred through the cervical plexus down its descending branches, which supply the acromio-clavicular region and the root of the neck (echo). It is very easy to overlook these referred pains; they are often labelled as rheumatism. I was never more impressed by the truth of this statement than in the case of a doctor's son, aged 26, whose one and only symptom was acute pain in one spot over the right supraspinous fossa in response to pressure over the gall-bladder region. He was found to be suffering from a large liver abscess contracted from a slight attack of dysentery 20 years ago. It must be remembered that in the lower abdominal segments there is a lack of this delicate muscular perception, and extensive collections of pus in the pelvis may be accompanied by a flaccid hypogastrium.

Physiology.—The application of our knowledge of physiology plays even a more important part in diagnosis, for we here enter into more debatable ground. The basis of the problem concerns the neuro-muscular mechanism — i.e., the interaction between the sympathetic nervous system and unstriped muscle. With a moderate amount of distension this gives rise to such symptoms as flatulence; but when a hollow tube is stretched or obstructed, the reaction is colic, and according to the intensity—e.g., the stimulus—the pain is intense, irradiated or spread out along the segmental distribution or its reflex connexions.

Shock may be described as the soft pedal to our musical simile. It masks the symptoms. When seen in its primary stage after a perforation or hæmorrhage it offers no difficulties, and it is followed by a greater or lesser amount of recovery. When a patient is seen at this stage there may be a tendency to underrate the severity of the lesion. Sooner or later after this latent period there follows a stage of secondary shock or collapse, which is a clear indication that urgent measures are not to be delayed.

Vomiting, the loud pedal, is usually the reflex response to the period of maximal stimulation of the lesion. In obstruction it becomes copious, projectile, and fæcal. In peritonitis it is repeated, but small in amount. It may be the one and only sign of an obstruction, and then the reaction of the vomitus will become alkaline to litmus.

Management of Cases.—A definite and systematic routine should be adopted in every case. The patient is put to bed, the abdomen is palpated, including the hernial orifices, any abdominal features are noted, and the rectum is examined. The heart, urine, lungs, discs, and reflexes should be investigated, for by this means most of the medical causes can be excluded. Medical and surgical causes occasionally coexist, and abdominal rigidity with a right basal pleurisy does not necessarily exclude appendicitis. Until the diagnosis is certain, it is wise to withhold morphia, and strong purgatives should not be given. A dose of castor oil will often precipitate the bursting of an inflamed appendix or aggravate the cause of an obstruction.

Cases may be conveniently grouped into three categories:—

1. The *fulminating* type, with sudden onset, where the diagnosis is clear, call for no comment and operation must be performed at the earliest possible moment.
2. The *insidious* type, where the symptoms are vague, and there are no definite clinical signs. Here is it permissible to temporise, and the past history should be fully reviewed. Repeated examinations will detect any change, especially in the pulse, temperature, and respiration. A mild aperient or enema may be administered. At the end of six hours it is necessary that some definite decision should be arrived at for an abdominal pain which shows no sign of abating.
3. The *latent* type is the most difficult of all, when the practitioner has been called in late, and there is no accurate record of the preceding events. The patient may have emerged from the stage of primary shock, and any disappearance of pain should be viewed with more suspicion than relief. On the other hand, the patient may be in a state of secondary collapse. If the diagnosis is in doubt, it is necessary that it should be clinched and immediate steps should be taken in this direction.

As a general guide, it is wise to remember that abdominal pain, shock, and vomiting are symptoms common to the majority of acute abdominal lesions, and it is necessary to carry in your minds a rough classification of these. Apart from the exclusion of those medical diseases, which have already been alluded to, they resolve themselves into three groups: (1) peritonitis, (2) hæmorrhage, and (3) obstruction. The common symptoms differ in varying degrees in each, and the various lesions under each heading present additional signs and symptoms which serve to distinguish them. With regard to the obstructions, we expect certain types at different ages; for instance, in infancy they are due to congenital abnormalities; in children, to intussusception; in young adults, to bands; in the active phase of life to hernia, both external and internal; later on, to impaction of gall-stones and volvulus; and in the elderly to acute obstruction following upon chronic obstruction from growths.

ENDOCRINE PROBLEMS IN THE SPECIAL DEPARTMENTS OF MEDICINE

(DR. H. GARDINER-HILL)

IN the field of general medicine several new hormones have become available for practical use, notably thyroxine, the active principle of the thyroid gland; cortin from the suprarenal cortex; and parathormone from the parathyroid glands. From the pituitary vasopressin, a blood-pressure raising principle, and oxytocin, a uterus-stimulating hormone, have been prepared. The latter is extremely useful in midwifery. In my experience, thyroxine appears to possess few advantages in the treatment of thyroid deficiency over the desiccated thyroid extracts which are in use. Cortin has been found to be of great value in the crises of Addison's disease. Parathormone raises the blood calcium but depletes the calcium stores in the bones, and is, therefore, only of value in conditions resulting from low serum calcium, where adequate skeletal stores are present.

Interesting clinical work has been carried out recently on the problem of Graves's disease, in the separation of thyrotoxic conditions into two main groups—primary and secondary Graves's disease. In the primary type the goitre and the toxic signs appear together; in the secondary, thyrotoxæmia appears in a patient with an existing simple goitre. It is generally conceded that this is an important differentiation from the point of view of treatment. Most authorities will admit that surgical measures produce the best results in primary Graves's disease if the operative risk can be taken. In secondary Graves's disease, surgery also produces the best results if the goitre is nodular. On the other hand, there is a group of cases of the secondary type in which thyrotoxic symptoms develop in diffuse simple goitres. In these cases the simple goitre itself has usually only been present for a few years. In the nodular cases, the preceding simple goitre is usually one of long standing. The diffuse goitre cases do not appear to respond satisfactorily to surgical treatment, which is usually followed by a recurrent hypertrophy. On the other hand, X ray treatment is often beneficial, possibly because it produces a fibrosis in the gland. It is important to lay stress on the value of removing septic foci in all these conditions. It is generally considered now that iodine is chiefly of value in both these forms of Graves's disease as a preliminary pre-operative measure. The immediate beneficial effect is often striking; subsequently, the remission in the symptoms passes off. It seems better, therefore, not to use iodine in the early stages if the possibility of operation will have to be considered later.

Of the new endocrine syndromes in the general field of medicine, that associated with the basophil adenoma, described by Cushing, is probably the most important. These patients become extremely fat, develop hypertrichosis, and a high blood pressure, with peculiar mottled skin with a tendency to striæ. A suprarenal hyperplasia is usually found in these cases, and it is doubtful as to which symptoms are due to the basophil adenoma and which to the adrenal condition.

In the field of pædiatrics, the chief endocrine problem which comes up for consideration is that connected with backward children. They may be backward physically, backward mentally, or both. The majority of the physically backward cases sent for examination are due to non-pathological conditions, either those with a family history of late development, or children who have been born prematurely, are small from birth, and have never quite made up their leeway. A characteristic of this group is that the skeleton is normally proportioned. This feature is also seen in a group of pathological cases due to a cachectic illness, of which tuberculous peritonitis or diabetes provide a good example. The endocrine cases are usually disproportioned, and due either to a thyroid or anterior lobe pituitary defect. These conditions can be distinguished, because the thyroid children are always mentally backward, whilst the pituitary children are generally alert. The differential diagnosis of the endocrine cases is usually from another group of disproportioned children—those who have suffered, or are suffering, from one of the various types of rickets. Of the children mentally backward, the chief group are the cretins, in whom treatment produces good results if it is instituted at a sufficiently early age.

The majority of other mentally backward children do not appear to fall into endocrine groups. There is little evidence to suggest that mongolism is attributable to endocrine disorder, and endocrine treatment appears to have very little, if any, effect. The mental defectives of various types, the amentias and diplegics, are often sent for advice with regard to the possibility of endocrine treatment, but none can be expected to have any beneficial effect.

In the orthopædic field, the chief endocrine problems are those associated with articular rheumatism in adults, and deformities, such as genu valgum, in children and adolescents. Non-articular rheumatism is not an infrequent early symptom of myxœdema, but as the latter is not a very common disease, it is unlikely that a thyroid defect plays a very important part in the majority of cases of non-articular rheumatism. In rheumatoid arthritis an endocrine factor has often been postulated, especially in those cases which occur in connexion with the sex events of the female, especially the climacteric. In my experience, however, glandular treatment seldom produces any striking improvement in this group. In osteo-arthritis of the hypertrophic form, especially when the joints of the lower limbs are affected, and occurring in patients who have rapidly become excessively fat, there is a useful field for endocrine therapy, in conjunction with dietetic measures. If the basal metabolic rate is low, there is a good indication for treatment with thyroid extract, and reduction in weight often produces striking improvement in symptoms, although, of course, permanent bone changes cannot be altered. The investigation of a series of endocrine cases, as regards incidence of arthritis, does not show any very striking relationship, except when obesity is present. Any glandular condition which causes obesity seems liable to increase the incidence to arthritis. In my series this was especially found in the thyroid and gonad deficiencies. The same result was seen in a series of cases of familial obesity. Increase in weight, leading to trauma, may be a factor of importance.

In the gynæcological field much research work has been done recently. The anterior pituitary sex hormone, prolan, has become available for clinical work, and there are several potent preparations of œstrin, the follicular hormone from the ovaries, on the market. Recently, in Germany, an active preparation of corpus luteum hormone has also been produced (luteohormone). All these preparations have been tried out in the various types of amenorrhœa, where no pelvic lesion is found. Up to the present, primary amenorrhœa has not responded satisfactorily to treatment, but there seems to be a useful field for the œstrin preparations in secondary amenorrhœa, where the condition does not result from a deficiency in some other gland, such as the thyroid, anterior lobe of the pituitary, or adrenal. In simple secondary amenorrhœa, the stronger œstrin preparations, such as those now made by Schering's under the direction of Prof. Kaufmann, in doses of 50,000 units, seem to produce satisfactory results; at least, this has been my experience. When a course of this extract is given during the first half of the intermenstrual interval, and is combined with a course of luteohormone (Kaufmann) during the second half, positive results seem to be the rule.

The majority of cases of menorrhagia which come for investigation to the general physician do not seem to be endocrine in origin. A number of them represent the different forms of the hæmorrhagic diathesis, especially thrombocytopenia. Others are associated with gross hypertension, especially that form which occurs at the climacteric. Of the endocrine cases, myxœdema is the commonest cause, in my experience, in adults. In adolescents, on the other hand, a thyroid deficiency usually inhibits the full development of the ovaries, and there is often a tendency to irregular menstruation and amenorrhœa. If the thyroid defect is severe, menstruation and the secondary sex characters do not develop fully. On the other hand, if it is mild, menstruation occurs only at infrequent intervals. Treatment with thyroid extract is generally beneficial.

As regards sterility of endocrine origin, here again the thyroid-deficient group are the most hopeful from the point of view of treatment, whilst in those cases associated with amenorrhœa, the result depends, to a large extent, on whether the latter can be overcome. It is hoped that the new and stronger preparations of œstrin and corpus luteum hormone will be valuable in this condition.

EVERYDAY HELPS

(MR. F. F. MUECKE)

I PROPOSE to discuss the diagnosis and treatment of some common conditions of the throat, nose, and ear that may be met with any day in general practice.

THROAT

The diagnosis of *congenital adenoids* is generally a simple matter. The mother will tell you that during feeds the infant has constantly to stop suckling to take in air by the mouth, and has done so from birth. If there is any question of the condition being due to congenital stenosis or occlusion of the posterior nares the matter can be settled by running a little milk through the anterior nares and watching whether or no it appears in the nasopharynx. The adenoids if present can be removed without an anæsthetic with a small curette.

I should like to emphasise the fact that provided you select your cases of *tonsils and adenoids* with care, and only operate if there are definite indications for removal, and provided you do the operation properly, then your results will be extremely satisfactory. The points that would persuade me to remove a child's tonsils and adenoids are repeated colds, attacks of earache, long-continued enlargement of the tonsillar cervical glands, bad facial development (narrow nose, high palate, crowding of teeth), poor general physique, slow mentality, nocturnal enuresis, rheumatic manifestations, nephritis—and, I might add, a physician who gives me no peace until I agree to the removal! In adults one must also include repeated attacks of tonsillitis (with or without quinsy), acute and chronic rheumatism, certain cases of diabetes, goitre, nephritis, anæmia, urticaria, arthritis, and dyspepsia. There seems little doubt that the tonsils and teeth are the commonest seat of focal sepsis.

As far as methods of removal are concerned, I consider that the only justifiable one in children is by Sluder's guillotine method. Dissection requires a deep anæsthetic, and it is impossible not to interfere with the innervation of the small soft palate in children. It is essential, however, that the operator knows how to use the guillotine correctly, and that the blade of the guillotine is blunt. With this method I get no higher percentage of recurrence than with dissection. In adults most cases should be dealt with by dissection and ligature of bleeding points. With neither of these methods should there be more than slight post-operative bleeding. If there is, having made up your mind that there are no actual bleeding points which need tying, give a hot peroxide gargle and some morphia, and watch the pulse carefully. If an ooze persists press a gauze pad into the tonsil bed and hold it there with your finger. Intermittent pressure of this sort will almost always stop the bleeding. Secondary hæmorrhage is a more troublesome matter. It comes on a week or so after the operation in a septic tonsil-bed. It is best to sit the patient up, give a hot peroxide gargle and morphia, and watch the pulse. If the bleeding continues, apply a thick paste, made with three parts of tannic acid to one of gallic acid, to the tonsil-bed. If this fails, as a final resort the faucial pillars must be stitched, but I do not remember a case in which I have had to do this. The general management of a patient recovering from tonsillectomy includes a generous diet of soft cold food. A good gargle for relieving the pain of the raw tonsil-beds is made with pulv. acid acetyl salicyl.

The so-called non-operative method of removal by diathermy cannot be too strongly condemned. It is dangerous, ineffective, and very liable to produce secondary hæmorrhage, and it renders extremely difficult the dissection which is generally necessary later.

The brawny swelling of a *streptococcal throat* begins on one side and the patient can generally open the mouth well. It must not be confused with a quinsy, which is part of an acute tonsillitis, and in which opening of the mouth is generally limited. A streptococcal throat should not be incised. Antistreptococcal serum should be given early and in large doses. Hot gargles and a paint of 75 per cent. tinct. ferri perchlor. in glycerin are helpful.

There are only three important conditions affecting the *larynx* that I will discuss—namely, tuberculosis, syphilis, and new growth. If a man of over 45 years of age comes to you complaining of hoarseness which has persisted for more than two weeks the matter must be taken seriously, as a fair number of such cases prove to have a carcinoma of the larynx. Tuberculosis and syphilis of the larynx are always associated with signs of these diseases in other parts of the body. Tuberculous laryngitis produces a voice that is a painful whisper. The disease usually starts on the arytenoids as a shiny œdema. Ankylosis occurs late. Syphilitic laryngitis produces a raucous hoarseness; the inflammatory process most commonly starts on the epiglottis, and may appear as a secondary or tertiary manifestation. Carcinoma produces a persistent and progressive hoarseness. It commonly begins on one of the cords, spreading rapidly and producing early fixation. I shall only briefly discuss the treatment of carcinoma of the larynx, and I will say that the prognosis for intrinsic carcinoma if seen early and dealt with either by median or lateral window laryngotomy is not at all bad. Should operation be refused or contraindicated radium needles inserted like a fence around the larynx may be used. Extrinsic carcinoma of the larynx is, in my opinion, almost always inoperable, as it means hemi- or complete laryngectomy; for even in the unlikely event of a cure the mental state following these operations is most unhappy.

NOSE

If cases of *fracture* of the bony septum or nasal bones are seen early—i.e., within nine or ten days of the injury—the deformity can and should be corrected.

If a deformity of the cartilaginous septum is present and persists it may need dealing with by submucous resection later. A *foreign body* in a small child's nose is best removed under a general anæsthetic owing to the danger of dislodging the foreign body into the nasopharynx, and thence into the larynx during the child's struggles. A *hæmatoma* of the septum is best left alone if circumstances allow that it can be watched constantly. If the swelling increases rapidly in size the tension should be relieved by inserting a fine pair of sinus forceps through the mucous membrane.

In the vast majority of cases of *simple epistaxis* the bleeding comes from a small traumatic ulcer near the anterior end of the septum produced by the repeated picking of scabs. Treatment consists in the application of some simple ointment.

The fundamental condition in almost all forms of *nasal obstruction* is a deflected septum. This deformity may start to appear in youth, it is always traumatic, and the nasal airway becomes progressively obstructed. The results of this obstruction, however, frequently do not become obvious and troublesome till middle life or later. Such deformity of the nasal air-passages is at the bottom of many cases of repeated colds, chronic nasal catarrh, atrophic rhinitis, sinus infection, deafness, and some cases of asthma. Simple submucous resection of the deflected septum and such spurs as are present, if done reasonably early and by a good surgeon is one of the most satisfactory operations both for patient and operator. The turbinates are frequently much hypertrophied, particularly on the side of septal concavity, and the inferior turbinate on this side may be fractured up and down again so as to open the air-passage still more completely. Linear cauterisation of its surface may be necessary later, but in my opinion removal of such hypertrophied turbinates in part or whole is thoroughly bad practice.

Sinus Infection.—Patients who are discharging pus from the nose must be emphatically warned against the use of watery douches; they must be told to blow one side of the nose at a time, and not to blow hard. Acute inflammation of any of the nasal sinuses should never be dealt with by operation. The patient must be put on "intensive treatment." That is to say, he must be confined to bed in a warm room, and given at hourly intervals alternately a hot inhalation of Friar's balsam and a paraffin and menthol spray. The area over the inflamed sinus may be fomented. The intense pain is rapidly relieved and the temperature falls. The treatment is gradually discontinued, and at the end of a week the patient is usually up and about. He should then be sent to the seaside for a further week before returning to work. Uncomplicated chronic inflammation of the frontal sinus is probably best treated by nasal sprays. Chronic inflammation of the maxillary antrum is best dealt with by a radical operation, an opening being made in the incisive fossa and one in the inferior nasal fossa.

EARS

There are three important causes of acute *earache* which may be confused—furunculosis, erysipelas of the external auditory meatus, and acute otitis media. Hearing is diminished appreciably only in otitis media. Furuncles are best treated by repeated packing of the meatus with a small strip of gauze soaked in spirit. Erysipelas requires serum. Cases of acute otitis media are in my opinion probably best treated expectantly—i.e., hot glycerin containing some carbolic acid should be run into the meatus. The only cases in which paracentesis is probably helpful are those due to the staphylococcus where the drum can be clearly seen, red and bulging. Those due to the streptococcus usually have so much epithelial debris heaped up against the drum that accurate paracentesis is impossible. I have compared the end-results in a series of my own cases, some of which had paracentesis, and some of which were allowed to follow their own course, and I find that hearing is subsequently more affected in the first group than in the second. A foreign body in the external auditory meatus may be removed by syringing. If this is not successful it is certainly better to give a general anæsthetic if the patient is a child.

Noises in the ear are always circulatory, the patient hearing the heart beat or circulation through the ear. I do not like sedatives, for the noises are likely to be permanent, and it is far better to try and put the patient's mind at rest by explaining their full significance.

A discharging ear is always dangerous owing to the severe complications that may be caused, as mastoid, cerebral or cerebellar abscess, meningitis, and lateral sinus thrombosis. Danger signs are: (1) long-continued discharge, especially any sudden increase; (2) any sudden rise of temperature; (3) tenderness at tip of the mastoid process, also any œdema; (4) a feeling of solidity at the tip; (5) the presence of redness and œdema on the posterior wall of the meatus close to the drum; (6) facial palsy; (7) giddiness; and (8) constant unilateral headache.

SPECIAL ARTICLES

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE APPOINTMENTS COMMISSION

IN answer to a question in the Dáil last week as to whether it was his intention to abolish the Appointments Commission, Mr. De Valera disclaimed any such intention. He added that he had made inquiries into certain complaints as to the working of the Commission, and he had satisfied himself in each case that there was no ground for complaint. It is satisfactory to find that the Appointments Commission is becoming securely fixed as part of the machinery of administration. As far as medical officers are concerned a distinctly better class of candidate is being appointed than before the Commission was established, and it is probably the same in regard to non-medical officers. Certain improvements might be made in the working of the Commission, and it is unfortunate that effect has not yet been given to the recommendations of a joint committee of both houses which reported some years ago.

BY-ELECTION FOR DUBLIN UNIVERSITY

Dr. Robert J. Rowlette was last week returned unopposed as one of the representatives of Dublin University in the Dáil, to fill the vacancy made by the death of Sir James Craig last July. Dr. Rowlette is King's professor of materia medica and pharmacy in the University. He has been active in public medical affairs, and is at present president of the

Irish Medical Association and a direct representative on the Irish Medical Registration Council. He was a member of the Irish Public Health Council established in 1919, and also of the committee of inquiry into National Health Insurance and Public Medical Services.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

CHILD HEALTH "RECOVERY"

ON Oct. 6th at Washington I attended a conference called by Frances Perkins, Secretary of Labor, and by her entitled a child health recovery conference. Among those present were health commissioners from 38 States; the president-elect and other representatives of the American Medical Association; the president, secretary, and many Fellows of the American Public Health Association; distinguished individuals in the field of nutrition, dentistry, and public health administration; and representatives of Federal and State relief organisations. The chairman was Miss Grace Abbott, of the Children's Bureau, and she called upon Miss Perkins, Mr. Harry Hopkins (Federal relief administrator), and Mrs. Roosevelt to address the meeting. Statistics were presented showing that in some areas of Pennsylvania there has been an increase in malnutrition during the last year. A detailed scheme for dealing with malnutrition was presented from the State of New York. Methods of seeking out the malnourished among the families of those receiving relief and in the school populations were suggested. However, as the conference wore on, there was evident a strong body of opinion that no new condition of malnutrition is to be faced. The very little child "recovery" was challenged as implying a setback in child health. Several speakers roundly asserted that all the evidence was in support of a steadily improving child health and that there is not any evidence that malnutrition is more widely prevalent now than it was ten years ago. The problems to-day are the same problems we have faced before the depression and must face after the recovery—problems due to the uneven distribution of wealth and especially problems arising from ignorance concerning the choice of food. The importance of health education was stressed more than once with reference to the unfortunate fact that Federal grants in aid of such work have been severely curtailed. Miss Abbott, in rejoinder, stated that it is well known to the Federal relief administration as well as to the Children's Bureau of the Department of Labor that serious malnutrition does exist and that in certain areas relief committees are attempting to administer relief not on the basis of one and a half dollars per person per week, but on the basis of one and a half dollars per family per month, and that there is "resistance" to a raising of this very low standard. Nobody attempted to controvert this evidence, and it was agreed to forward the programme of the Children's Bureau for child health "recovery" or health "maintainence," adapting the programme to the individual circumstances of the several States.

POSITION OF HOSPITAL CONTRIBUTORY SCHEMES

ADDRESSING the third annual conference of the British Hospitals Contributory Schemes Association at Harrogate, Mr. Sydney Lamb, secretary of the Merseyside Hospitals Council, advocated the organisation of hospital services under territories. "Would it not be better," he asked, "for medical and economic reasons, that there should be hospital areas with a general hospital as the centre, not merely of hospital service, but of medical education and scientific research?" Around this, at strategic points, would be the general county hospitals, circling which would be a number of local or cottage hospitals. For similar reasons an attempt should be made to define contributory scheme areas throughout the country. The serious overlapping of areas and the consequent dissension could be lessened or avoided if contributory schemes adopted a general scheme of reciprocity. To whatever hospital a contributor was admitted it should accept responsibility for an agreed cost of maintenance. Was it fair that because a patient, on medical advice, had entered a hospital in an area outside that of his own local contributory scheme a smaller payment towards his maintenance should be paid than if he were in a local hospital connected with that scheme? Sir Robert Bolam advocated an extension of contributory schemes to the middle classes, and suggested the following limits of income: single person, £350 a year; married men without dependants, £425; married man, with dependants, £500.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Act. Surg. Lts. (D) W. G. Finnie, F. R. McN. Willis, and J. W. Robinson are confirmed in their rank.

The following appointments are notified: Surg. Lt.-Comdrs. G. S. Rutherford to *Cornwall* and T. G. B. Crawford to *Ark Royal*, appt. to *Pembroke* for R.N.B. cancelled.

Surg. Lt. F. L. Goldsworthy to *Ganges*, appt. to *Victory* and R.N.B. cancelled.

ROYAL NAVAL VOLUNTEER RESERVE

Proby. Surg. Lt. J. B. Douglas to be Surg. Lt., and Proby. Surg. Lt. (D) G. E. Chad to be Surg. Lt. (D).

Surg. Sub-Lt. R. G. Reid to be Surg. Lt.

Proby. Surg. Sub-Lt. W. E. Pycroft to be Surg. Sub.-Lt.

ARMY MEDICAL SERVICES

Maj.-Gen. H. E. M. Douglas, late R.A.M.C., is placed on half-pay.

Col. D. S. Skelton, late R.A.M.C., to be Maj.-Gen.

Lt.-Col. L. V. Thurston, from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Maj. & Bt. Lt.-Col. S. W. Kyle to be Lt.-Col.

Capt. C. B. R. Pollock (R.A., T.A. Res.) to be Lt. (on prob.).

ARMY RESERVE OF OFFICERS

Maj. E. C. Whitehead, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Maj. C. A. Webster to be Lt.-Col. and to comd. 125th (E. Lanc.) Fd. Amb.

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj. E. Alderson, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

Capt. J. McG. Deuchars, having attained the age limit, relinquishes his commn. and retains his rank.

INDIAN MEDICAL SERVICE

Capts. S. Roy and V. V. Puri relinquish their temp. commissions.

ROYAL AIR FORCE

Flight Lt. G. A. M. Knight is granted a permanent commission in this rank.

Flying Officer C. H. Smith is promoted to the rank of Flight Lt.

ROYAL AIR FORCE RESERVE

Flight Lt. C. Y. Roberts relinquishes his commission on completion of service and is permitted to retain his rank.

CORRESPONDENCE

BEQUESTS TO MEDICAL CHARITIES: A FINE PROPOSAL

To the Editor of THE LANCET

SIR,—You have drawn attention in the past to the tendency of medical men to make bequests to all kinds of institutions except those medical charities which it may be suggested ought to be the first objects of their consideration. No one, of course, expects a member of the medical profession to bequeath money to charity unless he has also made due provision for his dependants; but there are many in this position who overlook the pressing needs of Epsom College and of the Royal Medical Benevolent Fund when making their wills. With a view to creating a wider interest in these two charities, I make the following offer to all my colleagues.

If 19 others will engage to do as much (or more), I will add a codicil to my will bequeathing £100 to a medical charity. Those who accept may leave the money to Epsom College (which is my own choice), or to the Royal Medical Benevolent Fund, or to the Charities Committee of the British Medical Association. They are free to name a sum larger than £100—but £200 in one legacy shall not count as two legacies of £100 for the purpose of this offer. Two at £50 shall, however, count as equal to one of £100, because the creation of a wider interest is part of the plan. An existing bequest of £100 or more shall not be deemed to be one of the 19; but if a testator adds a further £100 to his existing bequest, he shall be reckoned in. Non-members of the profession are to be regarded as eligible for inclusion among the 19.

It is to be understood that any testator is at liberty to revoke his bequest if changed circumstances appear to him to justify such action. All that is asked is an honourable understanding that there is at the present time a genuine intention to let the bequest stand good.

It is suggested that those who may be willing to join in this scheme should forward their names to you, Sir, or to the chairman of the Medical Charities Committee at the B.M.A. House, Tavistock-square, W.C.1. When the 19 names have been received, a letter will be sent to each, asking that the necessary codicil (or will) may be executed, and that when this has been done a notification of it may be forwarded. The names will be kept strictly confidential, and as my own personality has nothing to do with any merits the idea may possess, I would ask to remain anonymous under the pseudonym of

Your obedient servant,

Oct. 14th, 1933. BACKBENCHER.

TUBERCULOSIS OF THE LARYNX

To the Editor of THE LANCET

SIR,—Dr. Hilary Roche's letter in your issue of Oct. 14th is welcome as it gives me an opportunity of correcting the impression given by the report of my remarks at the Dublin meeting, of which a short summary appeared in your issue of Sept. 23rd (p. 705). This incidentally provides a good instance of the difficulty of making an accurate report in a very condensed form. The statement attributed to me that "the high altitude of Swiss resorts made them unsuitable for laryngeal cases, which in the early stage might give rise to no symptoms," may well be taken to mean that I consider the Swiss resorts to be unsuitable for cases in the early symptomless stage. This, however, does not correctly expres my opinion, nor the gist of my remarks at Dublin. At the beginning of these, in order to emphasise th importance of routine laryngoscopic examination o consumptives, I mentioned that "laryngeal tuberculosis may give rise to no symptoms," and it was i a later part of my paper that I said that "the high-level resorts of Switzerland were not in general suitabl for the more advanced cases of laryngeal disease." It has been my experience that cases with muc infiltration at the upper aperture, or with any extensive ulceration, become more uncomfortable and d not get on well in the dry climate of the high-leve Swiss resorts.

I was also one of those who remarked that, a tuberculosis of the larynx is a complication of th disease in the lungs, the most important part of th treatment is that of the pulmonary condition, and have no doubt that this is the reason of the ver good results obtained in Dr. Roche's laryngeal cases He will, I hope, agree with my view, as thus stated that it is inadvisable to send to Switzerland th more advanced cases of tuberculosis of the larynx.

I am, Sir, yours faithfully,

London, W., Oct. 13th, 1933. HAROLD BARWELL.

CONGENITAL UMBILICAL HERNIA

To the Editor of THE LANCET

SIR,—Readers of the paper by Mr. Freshman i your issue of Sept. 23rd might be interested in th following case, which was operated on by Mr. A. H Crook at this hospital on Sept. 6th last.

The infant was a female and a first child, full term The labour was normal. A swelling of the umbilica cord was present at birth and rather larger than tennis ball. The child was 39 hours old on admission and was operated on four hours later. The coverin of the hernia was already opaque and yellow, with black line where the amnion joined the skin Chloroform was the anæsthetic used. A narro margin of skin was excised. The sac was compose of peritoneum and amnion, and its neck was abou one inch in diameter; it contained large and smal intestines, which were adherent. The contents wer reduced and the sac excised. Peritoneum, abdomina muscles, and skin were sutured separately. Unfortunately the skin broke down, but secondary sutur 15 days later was successful.

As Mr. Freshman points out, the condition in thes cases is not a true hernia, the contents never havin been within the abdominal cavity.

I am, Sir, yours faithfully,

E. A. HOARE,
House Surgeon, Princess Alice Memorial
Oct. 10th, 1933. Hospital, Eastbourne.

THE ANTI-NOISE LEAGUE

To the Editor of THE LANCET

SIR,—Following upon a letter to the *Times*, signe amongst others by Lord Buckmaster, Lord Horder Lord Riddell, a new association has been formed, an under the name of the Anti-Noise League, with th object of diminishing the amount of noise i modern life. A definite attempt is thus being mad to moderate what has long been a nuisance, and i now gradually, though not imperceptibly, becomin something more than a nuisance. Since the formatio of the League two or three weeks ago, a thousan members have been enrolled, and the stream o new adherents shows no sign of lessening. That th League will grow in power and influence, and that its efforts will prove to be successful must be the hope of every medical man, all of whom are not only frequent witnesses of the disturbing influence of street and other noises upon the sick, but are also themselves frequent victims in their own efforts to obtain repose.

When one considers the almost infinite variety and the multifarious source of the noises we have to endure, it soon will be appreciated how heavy and difficult is the task assumed by the Anti-Noise League. Motor-cars and their hooters; pneumatic street-drills; clattering lorries; banging doors; aeroplane engines; and the new and growing plague of wireless loud-speakers—there is no end to the volume. All the more reason, therefore, for medical men to join the League and to persuade others to do the same. Membership may be obtained by intimation to the Hon. Sec., Anti-Noise League, 18, Old Cavendish-street, W.1, together with the nominal fee of half-a-crown, or one guinea for Founder Members, which confers upon the subscriber the right of participating in the election of officers, and of taking an active part in this most necessary reformation in public manners.

I am, Sir, yours faithfully,

Oct. 14th, 1933. BECKLES WILLSON, Hon. Sec.

A SAFE MILK-SUPPLY

To the Editor of THE LANCET

SIR,—In your issue of Oct. 7th is an interesting paper by Prof. G. S. Wilson on the necessity for a safe milk-supply, read before the Agricultural Section of the British Association at Leicester on Sept. 12th. Prof. Wilson shares the view of some clinical teachers who are in favour of extending the policy of pasteurisation, making it applicable to the whole milk-supply of the country. This recommendation is, in general, at variance with the policy indicated in existing official regulations relating to the sale of milk, these being based presumably on the views of the skilled medical officers in the public health service. Nor does it accord with the policy which has been directed, for many years, with an increasing measure of success towards "cleaning up" the dairy herds of the country in relation to tuberculosis and other forms of infection. Can these views be reconciled, and if not, which is the correct one? I was recently invited to give my view on this question in the columns of the *Scottish Journal of Agriculture,* and these are presented in the forthcoming issue of that journal. The subject requires consideration from three points of view—the doctor, the dairy farmer, and the practical man of affairs. My views are based on an extensive clinical and laboratory study of nutrition problems, on an extensive experience as a producer of Certified milk, and on a first-hand knowledge of the efficiency (or otherwise) of pasteurisation, as now carried out by fully accredited business firms.

It seems clear that Prof. Wilson is accepting as correct much of the present teaching of the laboratory on the subject of "vitamins" in relation to milk, which, in my view, can be shown to be either entirely erroneous or at least unproven; and secondly, he is, for all practical purposes, leaving out of account the question of milk infected with *B. coli,* a contaminating organism, which according to present regulations must not be present in the higher-grade milks. It is not sufficiently known that the methods of pasteurisation in common use do not, by any means, effectively destroy this organism, and those who advocate the extension of the present system appear to have overlooked this fact. Prof. Wilson however clearly recognises it, as he states that a considerable amount of milk is pasteurised by wholly unsuitable methods with the result that not all so-called pasteurised milk is free from tubercle and other pathogenic bacilli. In his view the remedy is to be found "in a plant free from defects of design or structure" with "operators who are skilled and under constant supervision." It would be of interest to learn from Prof. Wilson his experience of the proportion of pasteurised milk-supplies commonly sold by accredited firms which contain *B. coli,* and also his opinion of the approximate cost involved in the application of the above remedy.

I am, Sir, yours faithfully,

CHALMERS WATSON, M.D.

Edinburgh, Oct. 13th, 1933.

EXAMINATIONS AND INTELLIGENCE TESTS

To the Editor of THE LANCET

SIR,—I have read with much interest the leading article on this subject in your issue of Sept. 30th. The discrepancies in marking to which you call attention, although very disconcerting, are not at all incredible; they can be easily understood by anyone who has had much experience in marking examination papers, especially if there are many to be marked, and especially too if the questions set are such that no definite or specific answer is required, or if there is a divergence of views upon the matter requiring an answer, leading to a discursive reply.

I consider that much of this unsatisfactory evaluation of written papers could be avoided by adopting a very simple method which I have used in my own practice for many years. An examiner should be able to answer any examination question set by himself perfectly, or at all events, better than any candidate he is likely to have to examine. Therefore does it not follow that he should, at the time of setting the questions, write a "model answer"? In this answer he should bring out all the essential and important points for which the question was set, arranged clearly under headings or paragraphs with a value for each. If, for example, in a question valued at 30 marks there are five equally important points, 5 marks would be allocated for each, according to the correctness, clarity, or intelligent presentation of that point, leaving 5 marks to be disposed of for any special originality or points brought out other than have been set out in the model answer. If this method is used in marking the answers of a number of candidates to the same paper the work is not only much less fatiguing, but the relative performances are much more likely to be correctly estimated. Even if the person who has set the paper is not the one who is going to mark the answers, a model answer compiled by the former would still be of value in giving all markers the same basis upon which to work and in diminishing discrepancies of marking. This method can be extended to the marking of candidates at a viva-voce examination, but there is probably a greater liability to error here because of the human element, and especially the reaction time of the candidate. If communication between candidates just examined and those about to be examined can be definitely excluded, it seems to me much fairer if the same or a similar series of questions is put to each set of candidates so isolated.

I have on several occasions advocated that students offering themselves for the nursing profession should have an intelligence test before being accepted, and I venture to think that it would be of very great prognostic, or shall I rather, at this stage, say statistical value, if applied to students about to enter any profession.—I am, Sir, yours faithfully,

ERNEST C. HADLEY.

City General Hospital, Leicester, Oct. 14th, 1933.

NASAL INFECTION IN THE PSYCHOSIS

To the Editor of THE LANCET

SIR,—Dr. McCowan's paper in your last issue (p. 853) is a welcome addition to the research on the relationship of nasal sinusitis to mental disorder, and I wish to offer my congratulations to him on his appreciation of the causal relationship of these conditions in at least some of his cases. Although the percentage of his cases investigated for sinusitis, or other sources of focal sepsis, appears to have been considerably lower than that of the Birmingham mental hospitals, this is at present—when considered in relation to the enormous problem of mental disorder—of small importance, because marked variations in the proportion of psychosis determined by sinus sepsis at clinics situated in different districts are inevitable. It must also be pointed out that, having once recognised the far-reaching importance of sinusitis in mental patients, the proportion of positive findings of chronic sinusitis increases markedly with experience. Even in the paper he quotes by Clark and McCowan the following statement is made: "The frequency of sinusitis discovered has turned out to be greater than was anticipated."

The outstanding importance of Dr. McCowan's contribution lies in his acceptance of the view that septic conditions responsible for the causation of mental disorder should receive "vigorous" treatment. In view of his confirmation of the importance of nasal sinusitis as an ætiological factor in some cases of psychoses it would be unfortunate if, through minimisation of its value by reason of his findings of lower proportional incidence, neglect to examine completely the nasal sinuses led to failure in recognising less obvious cases of psychoses arising from infection in these cavities.

I am, Sir, yours faithfully,
T. C. GRAVES, M.D. Lond., F.R.C.S. Eng.

Rubery Hill, Birmingham, Oct. 16th, 1933.

HEREDITARY TELANGIECTASIA

To the Editor of THE LANCET

SIR,—The case of hereditary telangiectasia recorded by Dr. Meikle in your issue of Oct. 14th (p. 863) is interesting, but I do not think the condition is as rare as most authors suggest. In the past two years I have seen six families showing this abnormality, which is inherited as a simple Mendelian dominant, all living within the Leeds area; these families showed some 30 affected individuals, and as far as I know none of them has been recorded in the literature. This is remarkable in view of the statement of Goldstein (THE LANCET, 1933, i., 116) that there are "recorded to date about 110 or 120 families and about 700 persons suffering from Rendu-Osler-Weber's disease . . . in the entire available medical literature of the world."

In my opinion, most of the cases are first seen on account of recurrent epistaxis by the rhinologists, and, frequently, because of multiple crusts, the small telangiectases are not seen. The condition is of great general importance as bleeding may occur from any mucous surface, and I am sure that a careful inquiry into the family history would give the clue to the cause of many of those cases of hæmaturia, hæmoptysis, &c., which not infrequently remain obscure after the most exhaustive investigation. The recurrent epistaxis may give rise to the most profound anæmia with considerable splenomegaly, and I have seen cases where the epistaxis had been thought to be the result and not the cause of the anæmia. A history of bleeding transmitted direct through three generations, irrespective of sex, is enough to clinch the diagnosis in a patient showing telangiectases of any of the mucous membranes or of the finger tips.

I am, Sir, yours faithfully,

Leeds, Oct. 15th, 1933. HUGH G. GARLAND, M.D.

ANTISEPSIS IN MIDWIFERY

To the Editor of THE LANCET

SIR,—In an annotation in your last issue you call attention to the experiments of Mr. Maxted and myself which show that the elimination of contaminating hæmolytic streptococci from the skin of the hands can be accomplished more quickly and with more certainty by Dettol or a 2 per cent. solution of iodine than by the antiseptics usually employed in the past. But you throw doubt on the wisdom of the practical recommendation which seemed to us to follow from these results.

As it seems possible that the recommendation has been misunderstood, and as it is our desire that the work should be of practical use in everyday midwifery, may I attempt to make the position more clear? The procedure we advocated was as follows: "The hands should be washed in about 1½ pints of warm water with yellow bar soap for two minutes and dried. Dry, but not sterile, gloves are then put on, the hands being dusted with powder. The gloved hands are thoroughly washed with soap and water for a minute and then sterilised by soaking in one of the fluid antiseptic solutions specified above for two minutes or by rubbing on a little 30 per cent. Dettol cream till nearly dry." (The antiseptic solutions referred to were iodine, 2 per cent. watery solution with 4 per cent. potassium iodide; Dettol undiluted; lysol, 1 in 50, i.e., 3 drachms to the pint; or biniodide of mercury, 1 in 250.)

We did not labour the point that the *whole* glove up to the wrist must be treated with antiseptics, as we supposed that would be obvious. Assuming that that was done, surely you will concede that the upper part of the glove as well as the fingers will be sterile, and may safely come into contact with the birth canal?

But it may still be argued that the skin of the forearm above the glove would not have been effectively disinfected. To that we would reply that surgeons habitually wash the lower forearm before an operation, and there is no objection whatsoever to the application of neat Dettol or the 30 per cent. cream to the same area. Experiments quoted in the paper make it certain that the skin area so treated for two minutes will be entirely free from hæmolytic streptococci. Finally, if the accoucheur feels that he would like still more safety, let him, by all means, apply Dettol cream to the naked hands before putting on the gloves.

One more point in the annotation astonished me—it suggests that "the obstetrician may perhaps feel that laboratory experiments in which the hands are artificially infected with hæmolytic streptococci have not much bearing on practice." In what way could the experiments have been made to approximate more closely to the conditions of practice? It is true that the experimental infections we used were usually heavier than would occur in the practice of most doctors or midwives. But we were out to find an antiseptic ritual which could be relied upon *in exceptional circumstances*—e.g., in the case of a not too intelligent or conscientious individual whose handkerchief is daily fouled by a little streptococcal pus from a discharging antrum, or whose duties include the handling of soiled dressings from infected wounds. Puerperal infection by hæmolytic streptococci is happily now not chiefly an epidemic disease but an exceptional occurrence frequently due to unusual circumstances such as these, and our preventive measures should be so planned as to obviate it.

As a matter of fact our experiments as reported do lend themselves to one criticism—viz., that we carried out our tests with avirulent streptococci. In the main that is true—because we wished to avoid the risk of a dangerous infection. But it so happened that on three occasions having no streptococci available whose lack of virulence had been ascertained, and being impatient, we used a strain which we hoped was avirulent, but on subsequent testing turned out not to be so. The elimination of the virulent strain did not prove more difficult that that of the others—there was, indeed, a suggestion that it was killed rather more readily by certain antiseptics.

I am, Sir, yours faithfully,
LEONARD COLEBROOK.

Queen Charlotte's Maternity Hospital, Hammersmith, W.,
Oct. 16th, 1933.

⁂ We agree that Dr. Colebrook's method should be useful in everyday normal midwifery, but are not convinced that it sterilises the wrist sufficiently for operations in which, for example, the hand is introduced into the vagina. It seems to us impossible to scrub and rinse the top of the gloves adequately without letting soap and water run over the skin, and thence to the inside of the rubber. This water will be infected from the unsterile interior of the gloves and, if Dr. Colebrook's technique has been followed, will wash off the antiseptic barrier on the skin. Similarly, the whole glove cannot be soaked in an antiseptic unless the solution is allowed to run over the top; and when the arm is raised drops of possibly infected water will run back on to the forearm.—The criticism which may, we think, be advanced by some obstetricians is that the heavily infected fingers used in the experiments must be very rare in practice; many doctors attend 50 or more confinements a year, using the ordinary antiseptic methods, and have no serious sepsis. It was to meet this criticism that we quoted Dr. Colebrook's observation that the hands are very readily infected with streptococci from the respiratory passages.—ED. L.

HYSTERIA IN DOGS

To the Editor of THE LANCET

SIR,—My attention has been drawn to the annotation in THE LANCET of Sept. 2nd (p. 551) on my letter in *Nature* concerning so-called hysteria in dogs. You say there that my "work does not, on the face of it, explain why the disease was not observed until about ten years ago, and why it has increased so rapidly in both America and England." May I point out various possible reasons for this.

1. Hysteria may have occurred earlier, but it was probably then diagnosed as hydrophobia, and the dog destroyed.
2. Great advances have been made in dog breeding, and this in itself leads to a diminished resistance to most ailments.
3. Dog biscuits have become recently a far more general article of diet, and many dogs who formerly lived on a good mixed diet of household scraps now get nothing but biscuits.
4. Lastly, though here I am not speaking from personal knowledge, it is sometimes said that dog biscuits are now made from foreign grain of a lower grade than that formerly used.

From this it will be seen that it is possible to explain the recent prominence of dog hysteria on the lines of the vitamin-A deficiency theory.

I am, Sir, yours faithfully,
H. D. WALSTON.

King's College, Cambridge, Oct. 16th, 1933.

PUBLIC HEALTH SERVICES

The Cost of Lunacy Administration

THE period of national economy, however inevitable, came at an unlucky moment for progress in mental treatment. The Act of 1930 contemplated a move forward; the crisis of 1931 applied the brake. An official formula was devised for this and all other health services—namely, that the crisis need not involve the lowering of existing standards, but the utmost vigilance must be exercised to minimise expenditure and to limit capital outlay to extensions or developments which were really essential. As two recent official documents show, opinions can differ as to what is really essential. The first document is the report of the Board of Control for the past year. Its first sentence warns us that progress has inevitably been restricted by financial difficulties. The same apologetic motif runs through its subsequent pages, whether the topic is the shortage of beds in mental hospitals, the failure to make use of occupational therapy, or the non-development of the colony system for the younger and employable defectives. The other document is the report of the Select Committee on Estimates which deals with (amongst other matters) the cost of the Board of Control. The Committee frankly wants less money spent. It notes a small reduction in the central staff in 1932 and hopes the Board will avoid any fresh increase "particularly in the more highly paid staff which is relatively numerous." It trusts also that the Board will not "press local authorities to incur expenditure against their considered opinion unless it is quite clear that such expenditure is essential." The Board is accused of having "insisted on a higher level of expenditure than is economically justifiable in the circumstances of the present time." Local expenditure is really outside the province of the Select Committee on Estimates, but the Committee was evidently impressed by complaints that a spendthrift Board is stimulating extravagance among local authorities. There were hints of such complaints in the unofficial report of the Private Members' Committee on Public Expenditure, which incidentally cited the average cost of a mental patient as £500 a year though official statistics show that the correct figure is more like £50. Then there was the Ray report on local expenditure which suggested last year that the Board of Control exercises its powers without due regard to the ratepayers' burdens. In view of these observations the Select Committee on Estimates invited the evidence of representative members of the L.C.C. and the Surrey County Council. The witnesses gave the impression that these two important bodies naturally regard themselves as perfectly capable of deciding their own requirements unaided. Perhaps there are less progressive councils which do not attain the minimum standard without stimulus.

The harassed taxpayer, who is entitled to insist on getting good value for his money, shows no sign of wanting the health services cut down. Mental treatment, perhaps the least obvious and popular of them, must cost money unless the Act of 1930 is repealed and its policy reversed. The money would be well spent if everywhere the patient came early under observation and remedial treatment instead of being left till he is certified in an advanced stage of mental disease. As for the complaints of overstaffing, the Select Committee may think there are too many highly paid doctors at the Board of Control just as elsewhere it is "disposed to consider" that there are too many medical officers in the Ministry of Pensions and its local branches. Mental treatment can hardly proceed without expert assistance, and, as in the case of the experts who administer London passenger transport or the milk scheme, the labourer is worthy of his hire.

Adulteration of Food

In an address published in the October number of the *Journal of the Royal Sanitary Institute*, Mr. C. H. Manley, the Leeds city analyst, points out that crude adulteration of foods other than milk is now a thing chiefly of the past. Nevertheless, he holds that reforms are still required in regulations, and he urges the earliest possible resumption of the work of the committee appointed in 1931 by the Minister of Health to inquire into the working of the law governing the composition and description of food on sale. This work was suspended because of the financial crisis, but has now, we are glad to learn, been resumed. Meanwhile the reports of London medical officers of health are, on the whole, encouraging. Thus Dr. C. W. Hutt reports that in 1932 the borough of Holborn was in the happy position of finding only a box of blue ointment wrongly described, and three samples of sausages preserved, quite legally, with sulphur dioxide, but with no declaration of the preservative. The neighbouring borough of Marylebone (Dr. Charles Porter) found shredded suet adulterated with starch; tinned peas with tin, iron, and zinc; and coffee containing 76 per cent. of chicory. In Southwark the chief "catch" was caviare preserved with a large amount of boric acid. Dr. W. Stott, the medical officer, states, however, that this is the best method of preservation, and suggests that the regulations might be modified to allow of its use in suitable quantities. In the East End vinegar seems to be the chief delinquent, being found adulterated in Ilford, Hackney, and Poplar.

Mr. L. H. Lampitt, D.Sc., in a paper read to the Society of Public Analysts on Oct. 4th, dealt with the serious contamination of tinned sardines with lead. Part of this comes from the solder, but apparently the lead may also come from the grills on which the sardines are cooked. This, indeed, is the principal source of contamination.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 7TH, 1933

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 3 (last week 3); scarlet fever, 3530; diphtheria, 1200; enteric fever, 47; acute pneumonia (primary or influenzal), 637; puerperal fever, 39; puerperal pyrexia, 94; cerebro-spinal fever, 18; acute poliomyelitis, 33; acute polio-encephalitis, 3; encephalitis lethargica, 10; continued fever, 2 (Norton R.D., Derby, and Wandsworth); dysentery, 39; ophthalmia neonatorum, 72. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 10th–11th was as follows: Small-pox, 9; scarlet fever, 2720; diphtheria, 1724; enteric fever, 28; measles, 366; whooping-cough, 186; puerperal fever, 28 mothers (plus 11 babies); encephalitis lethargica, 256; poliomyelitis, 5; "other diseases," 139. At St. Margaret's Hospital there were 16 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 6 (0) from measles, 4 (2) from scarlet fever, 11 (0) from whooping-cough, 28 (7) from diphtheria, 92 (22) from diarrhœa and enteritis under two years, and 24 (2) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa, 8 occurred at Liverpool, 6 at Nottingham, 5 at Middlesbrough, 4 each at Sunderland and Birmingham, and 3 each at Hull, Leeds, Stoke-on-Trent, and Wolverhampton. Six fatal cases of diphtheria were recorded in Liverpool.

The number of stillbirths notified during the week was 211 (corresponding to a rate of 34 per 1000 total births), including 35 in London.

PANEL AND CONTRACT PRACTICE

Disentitled to Medical Benefit

WE recorded last week the decision of the Middlesex insurance committee to oppose any proposal for retaining under the National Health Insurance scheme those who have fallen into arrears by reason of unemployment. About the same time the London committee, by 18 votes to 3, came to the conclusion that there is no justification for any further encroachment on existing contributions or for a special subvention to the health insurance fund by way of an Exchequer grant. Among the three dissentients, however, from this view were Dr. R. G. Chase and Dr. E. A. Gregg. It is now clear, as the *National Insurance Gazette* remarks, that no deputation which insurance committees send either to the Ministry of Health or to the Treasury can claim to be unanimous on the subject. In fact, at their meeting on Oct. 6th, the Joint Committee of Approved Societies passed a resolution in terms identical with that of London.

But the fact remains that insurance committees are still for the most part dissatisfied with the prospect. At the annual meeting of the National Association of Insurance Committees, held in London on Oct. 12th, with Sir Thomas Neill in the chair, a resolution was carried to adopt its council's report recommending that the insured persons who become disentitled to medical benefit at the end of this year should, notwithstanding, be retained in the insurance scheme, financial provision being made for them by State grant and not by money from approved societies. At the annual meeting of the Scottish Association of Insurance Committees, while a motion regretting the Government's failure to make provision for continuance of these people in medical benefit was definitely turned down, the executive was left free to discuss the position with the Government. It is, however, noteworthy that speaking in Scotland at the annual panel conference on Oct. 4th, Dr. G. C. Anderson, medical secretary of the B.M.A., said that the whole of the public assistance class should in some way or other be brought within the ambit of the National Insurance system so far as medical benefit was concerned. It might, he added, be that their suggestion to the Government should take the form that for the purpose of medical benefit a contribution should be made by the local authority to the insurance committee to keep people in medical benefit. That would, he remarked, require an Act of Parliament. The Government, however, is showing no sign of relenting. Speaking at Darlington not long ago, Mr. G. H. Shakespeare, parliamentary secretary to the Ministry of Health, recalled the pulling out of insurance of something between 50,000 and 100,000 persons at the end of this year. It is, he said, extremely hard that men with a good industrial record should lose their insurance rights, and the Government had been criticised on that score; but the Ministry had decided that the health insurance fund was not to be debauched in the same way as the unemployment fund, and it was not right that people who for ten years or more had paid nothing should be treated in the same way as the other 17 million insured persons. To do so would be to undermine the whole structure of health insurance. In the face of this negation it is more than a little encouraging to see the Wilts County Council introducing a scheme for the provision of medical services to public assistance patients through the medium of local medical practitioners under contract. This scheme, which is to have two years' trial, contemplates that poor persons granted medical relief by the relieving officer will be able to select from a panel the doctor they wish to attend them.

A correspondent in the *National Insurance Gazette* asks, What do the present agitators desire? They are saying in effect to the unemployed person: "We want you to have medical treatment when you are ill —and that's all." But surely there is this difference between sickness benefit and medical benefit. It does not matter to anyone who actually hands over money to a sick person. A pound is a pound whether received from A or B. But what approved society official would admit that a doctor who is working under the public assistance committee for a fee of 3*d.* per attendance, will be just as much use to him when ill as the doctor of his choice who has attended him and his family? These people, it cannot too often be reiterated, become unemployed often through no fault of their own. When working they are compelled to choose a doctor and to carry out the regulations relating to medical attendance under the Act; and now, when there comes a time of depression, it is proposed to scrap these medical arrangements, estimated to cost about £60,000 for the whole country. Is it too late for the public to insist that such action is a miscarriage of justice towards the unemployed? The proper people to administer medical benefit are the insurance committees which have the clinical records and the administrative machinery. Payment should not, of course, come out of approved society funds; the Exchequer ought to find the necessary money to pay for the doctoring on the same lines as before. Thus "continuity of treatment" would be maintained.

Drugs and Prescriptions

Dr. John M. Johnston, who has succeeded Dr. Matheson Cullen as pharmacologist to the Scottish Department of Health, gave an interesting address at the annual meeting of the Scottish Association of Insurance Committees held at Aberdeen. Dr. Johnston knows the whole system established in Scotland for checking prescriptions of all sorts, and securing that the amount set aside for drugs under the National Health Insurance Act shall be economically used. He made short work of the allegation that under the insurance scheme medical practitioners are not permitted to supply medicines of the same quality as in private practice. There neither was nor could be, he said, any distinction whatever between "panel drugs" and "private drugs" in the matter of purity and excellence. There was, no doubt, among the medical profession a feeling that the financial provision for the supply of drugs was insufficient, and it was possible that this might occasionally have been used as pretext for providing inferior drugs—or none. Such differentiation was, however, illegal. A detailed study of many thousands of prescriptions during the past year had satisfied Dr. Johnston that the present amount of money expended upon drugs was more than ample; he had noticed a tendency to return to polypharmacy. For his own part, instead of stimulating the demand for more medicines, he would like to inaugurate an era of more treatment with less medication. The practitioner's quandary was exemplified in the question often heard at professional meetings—"What about the patient who presents himself with a cough and demands a bottle of medicine?" The remedy for that was not to be found in legislation. The practitioner must be the sole judge of what was required and of how much was required in the way of drugs. On the other hand, in the application of forms of treatment other than drugs, the practitioner's equipment was necessarily very limited. Until the position was readjusted so that practitioner and patient had wider access to methods of diagnosis and treatment in institutions, it was impossible to settle the question of drug therapy.

At the same conference some unkind remarks were made about doctors' handwriting in prescriptions. This complaint was voiced by the superintendent of the Central Checking Bureau in Glasgow when submitting a report on the drug accounts. A large number of prescriptions were, he said, incomplete, careless, illegible, or technically inaccurate. Even making the fullest allowance for the conditions under which prescriptions were written, there was still much room for improvement. If our legislators were to spend a day in the Glasgow bureau they would at once pass an Act making illegible writing a punishable offence, as it was in Norway.

MANCHESTER MEDICAL SOCIETIES.—The next meeting of the Manchester Medical Society will be on Nov. 1st when Dr. H. T. Ashby will speak on the treatment of empyema in children from the physician's point of view and Dr. Crighton Bramwell on gallop rhythm. On Dec. 6th the speaker will be Prof. W. Fletcher Shaw, and his subject functional uterine hæmorrhage. A joint meeting with the Pathological Society of Manchester will be held on Jan. 10th when Dr. Donald Hunter will speak on industrial toxicology. Other speakers for 1934 will include Dr. J. A. Ryle and Prof. T. H. Pear, and there will also be a joint meeting with the Liverpool Medical Institution. The meetings will all be held at 4.30 P.M., in the medical school of the University. The president of the society is Dr. C. Paget Lapage and the hon. secretary, Mr. D. M. Sutherland, 22, St. John-street, Manchester.

The Pathological Society of Manchester.—On Nov. 8th Dr. Louis Savatard will address this society on the problem of Paget's disease of the skin. The programme for 1934, besides the joint meeting with the Medical Society, includes meetings at which Mr. A. Dickson Wright and Mr. R. L. Holt will speak. Mr. John Morley, the president of the society, will give his address on March 14th and his subject will be surgery and the endocrine glands. The hon. secretary is Dr. G. S. Smith, who may be addressed at the Medical Library, The University, Manchester, 13.

OBITUARY

ARTHUR WILLIAM MAYO ROBSON, K.B.E., C.B., F.R.C.S.

CONSULTING SURGEON TO THE LEEDS INFIRMARY

We regret to announce the death of Sir Arthur Mayo Robson, which occurred in a London nursing-home on Thursday, Oct. 12th, in the eighty-first year of his age.

Arthur William Mayo Robson, the son of Mr. John Binnington Robson, of Filey, was born in 1853, and was educated at Wesley College, Sheffield. He received his professional training at the Leeds School of Medicine, which was later united with the Yorkshire College, one of the three constituents of the old Victoria University. The curriculum of the medical school was at that time arranged mainly to meet the requirements of the Royal College of Surgeons of England, possession of the M.R.C.S. being the goal of the average man. This Robson obtained in 1874 at the earliest age possible, amassing, also, every prize open to a student, although he was acting for much of the period as assistant to well-known local practitioners, one of whom was an expert obstetrician. For 28 years the posts which he held and the things which he did were closely associated with Leeds, though his surgical fame became world-wide. In 1876 he was appointed lecturer on and demonstrator of anatomy in the medical school, a post which he held for ten years. He soon obtained the F.R.C.S., and was appointed surgeon to the Leeds General Infirmary, becoming now lecturer on surgical pathology in the school and later professor of surgery in the Yorkshire College. His first appointment was remarkable in that he had never held any of the resident posts. He was surgeon to the infirmary for 18 years, but his teaching in the wards suffered from the huge numbers of his engagements outside. Students who saw him at work will never forget the experience, but he was not a good bedside teacher. He seemed oppressed by the feeling that there were other things waiting for him to do; he gave the impression that hurry prevented him from giving the necessary time to put the facts before his audience in an assimilable form. From 1902, when he removed from Leeds to London, until his death he was consulting surgeon to the institution. He became emeritus professor of surgery in the University of Leeds, which was founded in 1904 on the disruption of the Victoria University. The existence of full-time chairs of university rank in the Yorkshire College having assisted the College to obtain promptly the position of an independent university granting medical degrees, Robson's nomination to the position of emeritus professor of surgery in the University was justified by the remarkable developments in operative surgery which could be traced to his genius and energy, although he had left Leeds before the actual founding of the University.

SIR ARTHUR MAYO ROBSON

[*Photograph by Lafayette*

Robson's surgical work was mainly original, though undoubtedly he was inspired by Thomas Keith and Lawson Tait. He had few of the technical aids now at the disposal of the operating surgeon, and could act on no perfected technique; he devised his procedures as he went along. He at first confined himself to lines which would now be called gynæcological, but his eager mind soon turned to other problems, especially to the surgery of the biliary passages, developments in which he for a period made his own, and was universally recognised as a pioneer in them. His work on the gall-bladder began in 1884, and was quickly followed by surgical attacks upon the stomach, intestine, and pancreas. Full descriptions of his theories, procedures, and innovations will be found from his pen in books ranging over a long period dealing with the treatment of gall-stones (1892), of diseases of the gall-bladder and ducts (1904), and of cancer of the stomach (1907); while he wrote on these subjects in Allbutt and Rolleston's System, in Keen's System of Surgery, and contributed to the Proceedings of the Royal Society and the Transactions of various medical societies.

The following passage from Lord Moynihan's tribute to Robson which appeared in the *Yorkshire Post* on the day following Robson's death is a just and eloquent estimate from one who had been his house surgeon and was closely familiar with his practice. Lord Moynihan says: "He was, as he once said to me, 'very raw,' but to his aid came great gifts. He was a skilful fisherman; he had hands magical in their suppleness, gentleness, uncanny dexterity. He possessed industry the like of which I have seen matched in only one other among those with whom I have worked. He had a radiant, quenchless enthusiasm. His capacity for seizing upon relevant features in a new problem, of capturing the essential principle, and neglecting specious non-essentials seemed like wizardry. All these qualities and many more were at once in his service. But surgery is not a matter of divine intuition and of ease conferred upon its acolytes, and still less upon its High Priests, by favour from on high. It is a craft and a sacrament, and for the high practice of the craft there must be a great surrender and a great devotion. . . . The world held nothing for Robson for many years but the business of equipping himself for the career that lay before him. I was his house surgeon in 1887–1888. I came to him when he was in his formative stage, and the lessons he impressed upon a susceptible youth were quite unforgettable. His wide and recent knowledge of every authority who mattered, his loyal devotion to the great masters of surgery allied to his rebellion against false leaders, his infinite capacity for taking pains over the smallest detail, his ravenous hunger for more and still more intellectual food, his adventurous mind combined with caution dictated by his profound sense of responsibility to each individual patient, made one realise his intellectual humility, his unconquerable desire to learn, and his tender and most compassionate heart. He impressed me deeply from the first as being eager not only to learn, but to serve, and his gentleness and solicitude were the signs of one who loved his fellow men."

Letters from past colleagues began to reach us on the announcement of his death, all testifying to his remarkable qualities as an operator. One with whom he was closely associated at Leeds says: "It was a pleasure to watch the careful thoroughness with which he conducted his work. As a pioneer he constantly found himself up against unforeseen difficulties, which required ready adaptability, and he was always able to meet the emergency. But with all his enthusiasm he never lost sight of the patient's welfare. The quality which I admired most in him was the ability to recognise before it was too late that the limit of his patient's endurance had been reached. His judgment was as sound as his surgery." Another who was present as anæsthetist for a long period at Robson's operations writes: "His technique and surgical skill impressed me as being far in advance of any surgery that I had then seen. (I am talking of his arrival in London.) His skill, his quickness, his dexterity, and his resource in difficult abdominal operations were a delight to watch. His energy was boundless—I can now see his short stocky figure dashing two steps at a time up the stairs of nursing-homes."

Robson's association with the Royal College of Surgeons of England was a long and close one. He was elected to the Council in 1893, and retained his seat for 16 years. He was Hunterian professor on several occasions, and delivered the Bradshaw lecture in 1905. He was twice vice-president, and no doubt it was a disappointment to him that he was never elected to the presidency. He was not a man, however, who served well with others, and he had not the temperament to discharge official duties in accordance with the views of colleagues. But his genius brought him, as it deserved to do, every other public recognition. He was twice president of the surgical section of the International Medical Congress, that of 1900 in Paris and that of 1906 at Lisbon. He was president in 1897 of the British Gynæcological Society, and later occupied a similar position in connexion with the International Congress on that subject. And his practice up to the day of his retirement was European in range, while surgeons from all over the world, during the zenith of his fame, would come to see him operate.

On the outbreak of war Robson went with a field ambulance to France, but at the request of the French authorities he accepted almost immediately the invitation to organise a complete hospital for the French army, an institution whose valuable work was continued for some period after the armistice, while Robson was appointed to the Legion of Honour. During the hostilities he served at different times in France, Egypt, and Gallipoli, before returning to England as consulting surgeon to the Southern Command. For these services he received the C.B. in 1916, and two years later was knighted.

Robson, who had made a considerable fortune, had retired from practice before the outbreak of war, and both before and after the war period he spent much time and characteristic energy in the pursuit of sport. He was an ardent fisherman and became also devoted to big game shooting, and made for himself quite a reputation in this dangerous branch of field sports. He was twice married, first in 1883 to a daughter of Mr. William Walker, of Osmondthorpe Hall, near Leeds, who died in 1930, and recently to Mrs. A. C. Northern. He is survived by a widow and three daughters. These ladies, Mrs. Bayldon, Mrs. Tudor-Williams, and Miss Mayo Robson recently presented to the Leeds General Infirmary a portrait of their distinguished father.

ERNEST DYKES BOWER, M.D. Durh., F.R.C.S. Edin.

After a short illness Ernest Dykes Bower, late consulting surgeon and ophthalmic surgeon to the Gloucester Royal Infirmary, died at his home in Gloucester on Sept. 16th, at the age of 79. He was born in 1853 at Leeds, and after being educated at the Leeds Grammar School became a medical student at the Leeds General Infirmary, a fitting career for a grandson of that great Leeds surgeon, William Hey. He studied at Oxford for six months in 1874 as a Radcliffe University student. He qualified in 1875 and was appointed house surgeon at the Leeds Infirmary to the two famous surgeons, Teale and Wheelhouse. His next appointment was as house surgeon to the Gloucester Royal Infirmary, a post which he held for three years. He then started practice in Gloucester, and was soon appointed ophthalmic surgeon to the Infirmary. Some years later he was elected an honorary surgeon. The former post he held for no less than 38 years, the latter for 22 years. Twelve years after he had retired from the staff of the Infirmary he performed two emergency operations on the eye, both being successful. He took the F.R.C.S. of Edinburgh in 1900 and the M.D. of Durham in 1904. He was president of the Gloucestershire Branch of the B.M.A. in 1892, and a vice-president of the section of ophthalmology at the annual meeting of the Association in 1901. In 1910 he was High Sheriff of the City of Gloucester.

Dykes Bower was an extremely able musician—a family trait, for he was a cousin of the Rev. John Bacchus Dykes, Mus. Doc., who composed so many popular hymn tunes. He was at one time a fine organist, and to the end retained an exceptionally beautiful touch on the piano. A patient once told him that his playing had done her more good than his medicine—a somewhat doubtful compliment. He loved to emphasise how greatly his playing helped his surgical technique.

In his day Dykes Bower was an excellent surgeon. He was an astute diagnostician and possessed of considerable clinical acumen. It was such qualities that won him the admiration of a large circle of patients and friends, to the number of whom his musical talents added. During the year that he was High Sheriff, he and his wife combined with the Mayor and Mayoress of Gloucester to form the Civic Vocal Quartette. They sang in Gloucester Cathedral, Tewkesbury Abbey, at Bristol, and a number of other places in the county. The novelty of such a combination attracted at the time very considerable attention.

In Memory of the late Mr. Philip Glynn, F.R.C.S.—The friends and family of Mr. Philip Glynn (of whom an obituary notice appeared in The Lancet of Sept. 30th) are proposing to endow a child's cot to his memory in the orthopædic department of the General Infirmary, Leeds, where he worked and died. The house governor of the Infirmary will receive and acknowledge donations from any who like to contribute.

Dr. George Herbert Whitaker, whose death occurred on Saturday last, Oct. 14th, although a qualified medical man was not in practice, but was connected editorially with the famous Almanack. He was the eldest surviving son of Joseph Whitaker, F.S.A., who started the annual publication of Whitaker's Almanack in 1868.

THE LONDON MEDICAL EXHIBITION

The twenty-third exhibition was held at the New Royal Horticultural Hall from Oct. 16th–20th. About 150 stands were occupied, and many exhibitors reported a slight but unmistakable improvement in trade. Glandular therapy shows no decrease in popularity, but there have not been many additions to its range. The chief advance has been in the production of various preparations of ovarian follicular hormone. The international standard is not yet, unfortunately, followed by all manufacturers, and there is some confusion between rat and mouse units. More than one oily suspension of gold, for infective arthritis and tuberculosis, was exhibited. In the sphere of vitamins, halibut-liver oil holds its own, but some firms advertise standardised vitamin A and D preparations which allow more accurate dosage. Wheat-germ oil, containing a high proportion of vitamin E, is recommended by a few makers for dietary sterility and repeated abortion. A pancreatic hormone, said to have vagus-stimulating properties, was introduced by one firm for the first time, and a newcomer showed a preparation of pure live-yeast cells. For the most part, however, the exhibitors and their products were old and well-tried friends.

Drugs and Pharmaceutical Preparations

(90) Allen and Hanburys, Ltd. (Bethnal Green, E.), among their many food and drug preparations, pointed out their half-cream Allenburys Milk Food for infants suffering from fat indigestion; Milk Food with additional iron; Euparatone, a biologically standardised solution of the parathyroid hormone which mobilises calcium in the blood-serum; and a series of Halibol preparations to administer vitamins A and D. Haliborange consists of Halibol and Allenburys Orange Juice, and one teaspoonful is equivalent in vitamin potency to a teaspoonful of cod-liver oil and two teaspoonfuls of fresh orange juice. Eulaxase is a combination of biliary and intestinal secretions with agar-agar and *Bacillus acidi lactici*, for constipation.—(10) Anglo-American Pharmaceutical Co., Ltd. (59, Dingwall-road, Croydon), had a number of drugs and chemicals on show, including Sal. Antisepticus, Huxley, a granular powder used for mouth washes, gargles, and douches; Casali Alpha a catalytic rejuvenant. especially recommended by the manufacturers for keeping the skin young, representing glycerophosphates and metallic ferments in colloidal solution. They also stressed Dermafoam, an oily, soluble emulsion for removing ingrained dirt from the hands without any abrasive action.—(116) Anglo-French Drug Co., Ltd. (11 and 12, Guilford-street, W.C.), showed Orkitone, an interstitial extract said to have powerful tonic properties; Vagotonine, an extract of the regulating hormones of the vegetative system, for high blood pressure; and Biomucine, a preparation of mucin from gastric mucus for the treatment of ulcers and hyperacidity.—(7) Armour and Co., Ltd. (Armour House, St. Martin's-le-Grand, E.C.), had on show their many preparations of nourishing foods and glands, particularly pointing out Panlittol, a new product for controlling high blood pressure, and containing extracts from the pancreas and thyroid; and Promin, an ovarian follicular hormone, standardised in Allen and Doisy rat units. They also showed their heat-sterilised Glanoid Ligatures.—(44) Bayer Products, Ltd. (Africa House, Kingsway, W.C.), amongst their well-known pharmaceuticals, especially put forward a new hypnotic, Evipan, a barbiturate with extremely rapid detoxication, that brings the subject to the threshold of sleep and then leaves him in natural sleep; and Prominal, a new product which retains the full anti-epileptic effects of Luminal though having none of its hypnotic action.—(35) John Bell, Hills and Lucas, Ltd. (Oxford Works, Tower Bridge-road, S.E.), have introduced a number of colloid preparations among which they direct attention particularly to Colloidal Calamine which, unlike most calamine lotions, neither creams nor settles; Colloidal Acriflavine with paraffin, is becoming increasingly popular for dressings and burns; and their Ephedrin Nasal Solution is sold in small bottles, supplying a drop at a time, for direct application to the nose.—(5) Bengue and Co., Ltd. (24, Fitzroy-street, W.), had the familiar Bengue's Balsam and Dragées, and a new sterilised isotonic solution called Rhinofluine for controlling sensitiveness and disordered secretion in the eye, nose, and throat; and Molene, a preparation of molybdic anhydride for intravenous injection; Lipaurol, a new gold preparation for tuberculosis; and Neopancarpine, an intramuscular injection for asthma and like disorders.—(37) Boots Pure Drug Co., Ltd. (Nottingham), among their numerous fine chemicals and drugs, drew special attention to Intramuscular Liver Extract, a concentrated sterile solution of mammalian liver for pernicious anæmia, each batch being clinically tested before issue; Livron, a compound liver extract with iron, malt, and other ingredients, specially compounded for the purpose of giving massive doses; and Pepsac, an active preparation of desiccated stomach for pernicious anæmia.—(87) Bisodol, Ltd. (12, Chenies-street, W.C.), again exhibited their remedy for digestive disorders, showing how it is also valuable to the dentist for maintaining the balance of normal reaction in the stomach and thus preventing dental caries. After extractions it relieves nausea by neutralising swallowed blood and mucus.—(61) British Alkaloids, Ltd. (Winchester House, E.C.), showed their T.C.P. B_3 Colloidal Emulsion, which liberates chlorine and iodine in the duodenum in order to render innocuous otherwise harmful amino-acids and bacterial proteins; and pointed out that their antiseptic T.C.P. has been found of great value as a solution for ionisation therapy. Its chlorine, iodine, and salicyl radicles are far more readily assimilated by the blood than are metallic compounds.—(140) The British Drug Houses, Ltd. (Graham-street, City-road, N.), introduced Oestroform, a powerful preparation of œstrin, containing 1000 international units per c.cm. They also reminded visitors of their range of standardised vitamin preparations, Radiostol, Radiostoleum, Avoleum, and Radio-Malt. They are exhibiting a protein-free liver extract for injection and also Livogen, which contains liver extract, hæmoglobin, and Vitamin B; Spironine is recommended for the relief of asthma. (114) Burroughs Wellcome and Co. (Snow-hill Buildings, E.C.), drew particular attention to Digoxin, a pure, stable crystalline glucoside isolated from the leaves of *Digitalis lanata*, which can be given intravenously with very rapid results in auricular fibrillation and which also can be given by the mouth. They also showed Ergotoxine Ethanesulphonate, a very stable form; vitamin products including Kepler Cod-Liver Oil and Tabloid Carotene and associated products, and their serological products.—(1) G. W. Carnrick Co. (Brooks and Warburton, Ltd., 232, Vauxhall Bridge-road, S.W.) showed their many pharmaceutical products such as Hormotone, and drew especial attention to Incretone, a liquid endocrine tonic, and Thelestrin, an entirely new preparation of standardised ovarian follicular hormone, each ampoule representing 25 rat units.—(165) Thos. Christy and Co. (4, Old Swan-lane, E.C.) showed a number of preparations including a new form of Barley Cream Sugar containing 96 per cent. glucose and Scotch barley malt with full diastase value retained.—(13, 14) Coates and Cooper, Ltd. (94, Clerkenwell-road, E.C.), showed products from Temmler Chemical Works, Berlin; A/S Serpens, Copenhagen; Krause Medico, Munich; The Battle Creek Food Co., Michigan; Dr. Thilo and Co., Mainz; The Laboratories Ivago, Paris, and The Bio-Chemical Laboratories, Ltd., Locarno. They particularly drew attention to Idozan a colloidal iron solution, neutral, and containing 5 per cent. of iron; and to the Dispert products prepared by the Krause desiccation process. Ethyl Chloride Simplex (Thilo)

with Eau de Cologne is still popular; and the Speton birth control preparations by the Temmler Chemical Works were also on show.—(3) CONTINENTAL LABORATORIES, LTD. (30, Marsham-street, W.), in addition to the familiar Taxol and Detensyl, had on view Enterofagos, polyvalent intestinal bacteriophages in 2 c.cm. ampoules for oral administration; and a new liquid ovarian extract, Crinex, to be given by the mouth and said to contain all the ovarian hormones in alcohol solution.—(117, 118, 138) CROOKES' COLLOSOLS (Park Royal, N.W.) especially emphasised the value of their various Halibut-Liver Oil preparations, which have no solvent; this obviates any risk of the acetone reaction which is sometimes observed in children as a result of using solvents. Their Halibut-Liver Oil Emulsion is quite tasteless. They also showed a new series of antiseptics—the Karvol series—which do not coagulate mucus and which have a carbolic acid coefficient of 144; it is put up as a lotion, a liniment, a surgical soap, and a dental cream. Ferrofax is a preparation of yeast and iron, for anæmia. Another feature was the Collosol Transfusion Ampoule, which is put up in various forms, carefully tested in all cases.—(125) E. G. SPICER AND CO., and ENDOCRINES, LTD. (Watford, Herts), especially pointed out Pituchinol, of which each unit contains three international units of posterior pituitary extract and gr. 1 of basic quinine; it is recommended for all stages of labour. They also had on show Transpulmin, a solution of quinine which can be used without the trying effects common in intramuscular injection; Solvochin, another quinine preparation for intramuscular injection, and Anabolin, a fractional extract of liver for high blood pressure.—(97) J. C. ENO, LTD. (Pomeroy-street, S.E.). Their well-known saline draught was represented as in previous years.—(149, 150, 160) EVANS SONS LESCHER AND WEBB LTD. (56, Hanover-street, Liverpool) had a large stand displaying many preparations, particularly Hepovite, a tonic restorative; Ephregel Nasal Jelly; E.D.P., a surgical dusting powder containing bismuth formic-iodide; Hepatex Liver Extract; Hepatex P.A.F. for injection; and Hepatex I.M. for intramuscular use. Their newest preparation is Hepatex Compound Intramuscular for anæmia and debility; it contains iron, arsenic, phosphorus, and strychnine in an isotonic, neutral solution.—(70) FASSETT AND JOHNSON, LTD. (86, Clerkenwell-road, E.C.), drew attention to their Iobrine extract of sea-weed for administering sea-weed baths anywhere; also to their large range of well-established remedies such as Angier's Emulsion, California Syrup of Figs, and Argyrol, their silver antiseptic.—(4) GEDEON RICHTER (GREAT BRITAIN), LTD. (1, Hardwick-st., E.C.), drew attention to Acitophosan, a combination of calcium cinchophen and calcium aspirin for colds and influenza; and among many gland products, to their anterior pituitary hormone preparation, Glanduantin. This is standardised by the same method as is used for the Aschheim-Zondek pregnancy test, a test which is performed in these laboratories for the medical profession at cost price.—(11) GENATOSAN, LTD. (Loughborough, Leicestershire), illustrated the antiseptic action of their well known Formamint by lantern slides, and also reminded visitors of their Sanatogen, Cystopurin, Genasprin, and vaccines.—(95, 96, 109) GLAXO LABORATORIES (56, Osnaburgh-street, N.W.) showed their new range of ampoules, which are very easily opened by the application of the stick provided, acting on a specially constructed cleavage line. Moreover, they have no dead space in which solution can accumulate and be wasted. They have also marketed a wheat-germ oil extract, containing vitamin E, for use in sterility and repeated abortion.—(121) C. J. HEWLETT AND SONS, LTD. (35–42, Charlotte-street, E.C.), among their wide range of surgical instruments and appliances, included their improved Tannic Acid Outfit for burns, including compressed tablets with which to prepare fresh the solution required. Among their many original preparations were the popular Mist. Pepsinæ Co. c. Bismutho, Hepatagen, and Antiseptic Cream.—(71) THE HOFFMANN-LA ROCHE CHEMICAL WORKS, LTD. (51, Bowes-road, N.), besides their well-known remedies, showed Saridone, a new analgesic tablet, an antipyretic derivative combined with phenacetin and a small quantity of caffeine. This is subject to neither poison nor D.D.A. regulations, and is said to have no harmful side action, and to carry no danger of addiction.—(45) HOWARDS AND SONS, LTD. (Ilford, London), had on show a wide range of preparations, particularly quinine bisalicylo-salicylate for colds and influenza; and Agotan for rheumatism, corresponding to the B.P. cinchophen, put up in tablet and ointment form.—(122) JOHNSON AND SONS (Hendon-way, N.W.) showed Arvitin, an organic compound of colloidal silver, and Estersal, a liniment of salicyl-hydroxy acetic esters for muscular rheumatism.—(166) KAYLENE, LTD. (Waterloo-road, N.W.), showed their well-known preparations, as well as a new product Carbokaylene, which contains vegetable charcoal and is specially indicated in flatulence; they also market an opaque meal mixture, and Kaylenema for radiographic purposes.—(59) LACTEOL DU DR. BOUCARD (30, Rue Singer, Paris), exhibited a new product, Oto-rhino-lacteol, an isotonic preparation; also their well-known Lacteol Pansement, Ovules, and Suppositories.—(139) LEVERS BROTHERS, LTD. (Port Sunlight, Cheshire), in addition to a wide range of oils, showed their Essogen capsules of Vitamin A Levers' preparation) the value of which is supported by a large volume of clinical evidence; and Advita, vitamins A and D.

(To be concluded)

OPEN-AIR SCHOOLS IN NEW ZEALAND

A PAMPHLET issued by the Open-air Schools League of New Zealand opens with a striking phrase of Prof. Terman's, "We have taken the child out of its natural habitat of open air, freedom and sunshine, and for nearly half his waking hours we are subjecting him to an unnatural regimen, one which disturbs all the vital functions." There follows a brief history of the inception of the idea at Charlottenburg with examples of its execution. Bushey Park, which it includes, is not however a school in the ordinary sense, but, as its full name "the King's Canadian Camp School" implies, is more of a temporary recovery camp, owing its existence to the generosity of a sister Dominion. It is not in fact such remedial schools as these that the league is advocating but what Dr. James Kerr calls "schools in the open air," that is, schools with an open side. The Derbyshire schools are mentioned and the fact is recalled that at the present time 80 per cent. of the plans submitted to the Board of Education (in England) are of an open-air or semi open-air type. The argument for the motto "Every school an open-air school" is strengthened by the fact that the yearly sunshine hours in Napier (N.Z.) are 2510, compared with 1179 in Westmininster. The particular model advocated is the Fendalton open-air classroom at Canterbury, which has one corner directed to the north, thus giving two sunny sides—north-east with large windows which can be fully opened, north-west with back-sliding doors which can be completely pushed open. It must be remembered that in the Antipodes the sun travels from east to west by the north. Not many details of the building are given, and it is said that modifications of the plan have added to the cost without conferring any advantage. The cost of the Fendalton classroom was only £411 10*s*.—one would like to know how many children it accommodates. The furniture consists not of desks but of chairs and tables, which make for less restriction of movement. The pamphlet, which may be obtained (pp. 24, 6*d*.) from the hon. secretary of the league, P.O. box 1177, Christchurch, N.Z., is simply written and is good propaganda.

MEDICAL NEWS

University of Oxford

Dr. A. G. Gibson has been appointed Litchfield lecturer in medicine, and Dr. D. A. Abernethy Litchfield lecturer in surgery.

University of London

Mr. Harry Berry, B.Sc., has been appointed, as from Jan. 1st, 1934, to the university readership in pharmaceutics tenable at the College of the Pharmaceutical Society of Great Britain.

University of Manchester

Dr. D. L. Griffiths has been appointed demonstrator in human physiology.

University of Wales

At recent examinations the following candidates were successful:—

D.P.H.

Part II.—G. J. Roberts, Frances E. Smith, and Anne E. Williams-James.

University of Dublin

At recent examinations in the School of Physic, Trinity College, the following candidates were successful:—

M.D.

Charles Bowesman, J. M. Hill, and Maurice Nurock.

FINAL EXAMINATION FOR M.B., B.CH.

Part I. (Therapeutics, Pathology, &c.).—J. N. P. Moore (passed on high marks), D. P. Burkitt, G. J. Dixon, Maureen C. E. Gore-Grimes, G. W. M. Elliott, F. T. P. Bergin, Leslie Fridjhon, D. H. T. Duggan, E. S. Dorman, R. F. Lurring, F. P. E. Smith, and R. I. Shier.

University of Sheffield

Dr. J. B. Leathes, F.R.S., has been appointed emeritus professor on his retirement from the chair of physiology Dr. R. Y. Dawbarn, demonstrator in pathology, and Dr. W. Vincent, lecturer in mental diseases, have resigned their posts. Mr. E. J. G. Bradford, M.Sc., has been appointed lecturer in normal psychology in the faculty of medicine.

Application is invited for the chair of pharmacology, vacated by Dr. Edward Mellanby on his appointment as secretary of the Medical Research Council. It is stated that the primary duty of the person appointed will be to carry out investigations in clinical and experimental medicine. Particulars will be found in our advertisement columns.

Scottish Conjoint Board

At recent examinations by the conjoint board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates were successful:

L.R.C.P., L.R.C.S., AND L.R.F.P. & S.

N. T. Segall, A. E. Landy, A. S. Weinstein, C. E. Gunatilleke, K. R. Perera, R. M. Scott, Bernard Kline, A. S. Walker, Philip Rossman, A. K. Sharaf, A. A. Rehman, Sidney Weiner, A. J. Brenner, Abner Morris, H. G. Braham, Eugene Saberski, D. E. Kabnick, R. O. Murray, Paramu Somasundram, Jack Isaacs, Joseph Reynolds, and Norman Patterson.

D.P.H.

A. D. Frazer, Katharine R. Brown, J. E. Rankine, W. D. Mackinnon, Rachel B. Nelson, W. E. Faulkner, Robert Hardy, and G. F. Bradbury.

Part I.—M. B. Griffith, J. E. Rankine, Marjorie Murrell, J. L. Swanston, W. R. Martine, Ruth M. Monro, James Macfarlane, and Hugh Somerville.

Glasgow Post-Graduate Association

A series of lectures will be given at 3.30 P.M. on Tuesdays, from Nov. 14th, in the hall of the Royal Faculty of Physicians and Surgeons, dealing with some practical problems in the light of recent research. They are open to medical practitioners without fee. At 4.15 P.M. on Wednesdays, from Nov. 1st, there will be clinical demonstrations. A special course in ophthalmology will be held at the Glasgow Eye Infirmary and at the Ophthalmic Institution; there will be demonstrations at the Ear, Nose and Throat Hospital; and the Radium Institute will give a course on radium therapy. Facilities for the study of clinical obstetrics and antenatal work are offered at the Royal Maternity and Women's Hospital. The secretary of the association is Dr. James Carslaw, 9, Woodside-terrace, Glasgow, C.3.

London Association of the Medical Women's Federation

A meeting, open to all medical men and women, will be held at B.M.A. House on Oct. 24th, at 8.30 P.M., when Prof. D. P. D. Wilkie will speak on the Surgery of the Colon. The paper will be illustrated by lantern slides.

Society of Public Analysts

A meeting of this society, to be held at 8 P.M. on Wednesday, Nov. 1st, at the Chemical Society's rooms, Burlington House, Piccadilly, London, W., will be devoted to a discussion on the chemical (as distinct from physiological) tests for vitamins. This will be opened by Mr. A. L. Bacharach, and the speakers will include Mr. L. J. Harris, D.Sc., and Prof. J. C. Drummond.

Department of Health for Scotland

Dr. T. Ferguson and Dr. A. McFarlane have been appointed medical officers in this department. Dr. Ferguson has for three years been H.M. medical inspector of factories for Scotland and North of England under the Home Office. Dr. McFarlane for a similar period has held the post of deputy medical officer of health for the borough of Darlington.

Medico-Legal Society

The annual dinner of this society will be held at the Holborn Restaurant, London, W.C., on Friday, Dec. 8th, at 7 for 7.15 P.M. Sir Bernard Spilsbury, the president, will be in the chair. An ordinary meeting of the society will take place at 11, Chandos-street, W., on Thursday, Oct. 26th, at 8.30 P.M., when Sir Bernard Spilsbury will deliver a presidential address on some medico-legal aspects of shock. The hon. secretary of the society may be addressed at 3, South-square, Gray's Inn, W.C.1.

Post-graduate Course for Medical Women

Members of the staff of the Elsie Inglis Memorial Maternity Hospital and the Edinburgh Hospital for Women are combining to give a joint post-graduate course at the two hospitals from Nov. 13th to 24th inclusive.

Lectures will be given on obstetrics, pædiatrics, medical conditions in pregnancy, research on puerperal sepsis, venereal disease in the pregnant woman, gynæcology, radium in gynæcological conditions, endocrinology, sterility, and birth control. Those taking part in the course will be free to attend the operations, ward clinics, and out-patient department at the hospitals. Accommodation will be provided at the Elsie Inglis Hospital for those who wish to reside there during the course. Further information may be obtained from Dr. Margaret Martin, at the Edinburgh Hospital for Women, Whitehouse-lane, Edinburgh.

Royal College of Surgeons of England

A quarterly meeting of the council of the College was held on Oct. 12th, with Sir Holburt Waring, the president, in the chair. Dr. F. G. Banting, M.C., professor of medical research in the University of Toronto, who is a member of the College, was admitted an honorary Fellow. Mr. Frank Philip Powell, late of Monmouth School, was appointed the fourth Macloghlin scholar.

The Council adopted its annual report to the Fellows and members, and this will soon be circulated to those who have expressed a wish to receive it.

A course of six museum demonstrations have been arranged and will be held at the College, Lincoln's Inn-fields, London, W.C., at 5 P.M., on Mondays and Fridays from Oct. 27th to Nov. 13th. The first three demonstrations will be given by Mr. C. P. G. Wakeley, who will show specimens illustrating gunshot injuries of the long bones (Oct. 27th), specimens of long bones showing the processes of infection and repair (Oct. 30th), and specimens illustrating gunshot wounds of the skull and brain (Nov. 3rd). Mr. R. Davies-Colley will give the other three demonstrations, and will show specimens illustrating diseases of the breast (Nov. 6th), fibrocystic disease and innocent tumours of bone (Nov. 10th), and diseases of muscles (Nov. 13th). The demonstrations are open to medical practitioners and advanced students.

Physiological Society

As already announced, this society is holding a joint meeting with the food group of the Society of Chemical Industry to discuss diet from the chemical and physiological points of view. It is being held to-day, Friday, Oct. 20th, at 8 P.M., at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C., and the speakers will include Prof. H. E. Armstrong, F.R.S., Mr. A. L. Bacharach, Prof. S. J. Cowell, Prof. J. C. Drummond, Dr. M. W. Goldblatt, Dr. R. D. Lawrence, and Mr. A. S. Parkes, F.R.S. On the following day, at 3.45 P.M., the society will hold a semi-annual meeting in the Sherrington school of physiology, St. Thomas's Hospital.

Fellowship of Medicine and Post-Graduate Medical Association

A course of gynæcology will be held at the Chelsea Hospital for Women from Oct. 23rd to Nov. 4th; one in diseases of the nervous system at the West End Hospital for Nervous Diseases from Oct. 30th to Nov. 4th; and one in urology at St. Peter's Hospital, from Nov. 6th to 18th. A week-end course in diseases of the chest has been arranged at the Hospital for Consumption, Brompton (Oct. 28th and 29th), and one in gynæcology at the Samaritan Hospital for Women (Nov. 18th and 19th). The subjects of other forthcoming courses include ophthalmology, at the Central London Ophthalmic Hospital (Oct. 30th to Nov. 18th); obstetrics at the City of London Maternity Hospital (Nov. 4th and 5th); medicine, surgery, and gynæcology, at the Royal Waterloo Hospital (Nov. 6th to 25th); diseases of the chest at the City of London Hospital, Victoria Park (Nov. 13th to 25th); and venereal disease at the London Lock Hospital (Nov. 13th to Dec. 9th).

Congress of Hydrology at Toulouse

A largely attended meeting of the Congrès International d'Hydrologie, de Climatologie et de Géologie Médicales was held at Toulouse from Oct. 4th to 8th, with excursions to neighbouring spas and health resorts. In this fourteenth meeting of the triennial congress the international character was more marked than hitherto, although all the proceedings were still in French (with the exception of one "rapport libre" and some speeches at functions), and no official arrangements were made for translation. Medical delegates were present from Belgium, Germany, Great Britain (Dr. Malcolm Campbell), Spain, Sweden, Holland, Persia, Greece, and various French colonies, and at most of the principal discussions one opening paper was read (in French) by a representative of some other country. Under the head of Hydrology the principal discussions were those on tonic cures for children and on the spa treatment of non-suppurative, primary infections of the nervous system (a general introductory survey of which was given by Sir James Purves-Stewart). In both discussions emphasis was laid on the necessity of suiting the choice of a resort to the season and the individual state of the patient, and the value of different climates at different stages or alternating according to the season. There was also an interesting paper on the use of spas in the Army Medical Service. Under Climatology the principal conditions considered were those forming the group of pulmonary tuberculosis. The term "medical geology" as used by the congress included the chemical study of waters, this time principally the thermal medicinal waters of the Pyrenees (with Spanish and French reports), and also their origin and captage, and the measures necessary to protect them and regulate their use. On this last point a valuable report was made by Prof. Timbal of Toulouse. The congress was presided over by M. le doyen Paul Sabatier, the veteran holder of the Nobel Prize in chemistry, and Prof. J.-E. Abelous of the faculty of medicine of Toulouse. Its excellent organisation was largely due to Dr. G. Serr, professor of hydrology of Toulouse, and his assistants. The delegates and members received delightful hospitality.

The International Society of Medical Hydrology, which held a general meeting of members on the 6th, was represented in the congress by its president, Dr. P. Ferreyrolles, of La Bourboule, by Dr. W. G. Willoughby, of Eastbourne, the hon. secretary (Dr. Armin Keller), and the general secretary (Miss W. T. Thompson).

Society for Relief of Widows and Orphans of Medical Men

At a quarterly court of directors held on Oct. 11th, Mr. V. Warren Low being in the chair, three new members were elected and the death of one reported. Special grants amounting to £84 10*s.* were voted to orphans, who had reached the age of 16, to enable them to continue their education. The sum of £625 was voted as a Christmas present to the widows and orphans in receipt of grants: each widow over 75 years of age to receive £15, under 75 £10, and each orphan £10. A widow of a member who applied for relief was voted a yearly grant from the ordinary funds of £50, and one of £25 from the Brickwell fund. A widow, whose death was reported, and who had been in receipt of relief for four years, had received in grants £300; her late husband, who was elected a member in 1903 and died in October, 1929, had paid in subscriptions £52 10*s.*, the maximum amount that an ordinary member can pay in yearly subscriptions before becoming a life member. This society is entitled to grant relief to the necessitous widows and orphans of deceased members. Membership is open to any registered medical practitioner who at the time of his election is resident within a 20-mile radius of Charing Cross. Particulars from the secretary, 11, Chandos-street, Cavendish-square, London, W.1.

London Hospital Dinner

Although no statistics were produced to show that the London Hospital had far outstripped all others during the past year, the old students who met at the Trocadero on Oct. 12th were in conspicuously high spirits. Dr. P. N. Panton, who presided, seemed to be right in his opinion—as one who formerly came from outside—that the predominant atmosphere of the hospital is one of vitality. (He wondered what would happen if Mr. A. J. Walton and Dr. Donald Hunter collided in a corridor). After speaking of developments such as the paying patients' scheme, now sanctioned, and the hostel, which would contain 50 students this time next year, he turned to his own specialty—clinical pathology. A concise definition of it was, "Clinical pathology is neither one thing nor the other"; but there were pure pathologists who said it did not exist at all. This was no doubt the view of a physician who wrote, about 1750, a book condemning the theory that any man should pretend to diagnose disease by casting of urine: "I will have none of these damned piss-prophets," said he. Dr. Otto Leyton, proposing the chairman's health, recalled his own experience as a clinical pathologist, including the story of an urgent telegram ("Can hold out no longer; what shall I do?") from a lady whom he had asked for a 24-hour specimen. Dr. Lewis Smith, who looked none the worse for it, announced that, like the elephant, the horse, and the rat, he had now no gall-bladder. Sir William Goschen and Prof. William Wright obliged the company with neat anecdotes, and Mr. Russell Howard gave extracts from his new history of the hospital. The dental department, it appears, was opened by Richard I., the funds going to the recovery of the Holy Land; in the eighteenth century students were first allowed to do dressings in the wards, and the house committee opened the septic block; and in 1953 Miss Ellen Wilkinson, first president of the Soviet Government of Great Britain, opened the private wards. In conclusion, Dr. Robert Hutchison raised history to a higher note with a schoolgirl's version of Drake's famous declaration on Plymouth Hoe: "The Armada can wait, but my bowels can't." He also solemnly averred that a candidate in last year's London M.D. examination remarked in an essay on angina pectoris that "the late Robert Hutchison used to say that his life was at the mercy of any person who made him lose his temper."

Appointments

EASTWOOD, W. J., M.B., M.Ch. Liverp., has been appointed Assistant Orthopædic Surgeon, David Lewis Northern Hosp.

FAWCITT, R., M.B., Ch.B. Edin., Radiologist, Whitehaven Hosp.

MACDONALD, D., M.B., Ch.B. Glasg., Medical Superintendent, Sanatorium, Kinross.

SMALLWOOD, W. CAREY, M.B., Ch.B. Birm., M.R.C.P. Lond., M.R.C.S., Physician to Out-patients, Children's Hospital, Birmingham.

TATLOW, R. E. T., M.D., F.R.C.S. Eng., Certifying Surgeon under the Factory and Workshop Acts for Porlock, Somerset.

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ROYAL SOCIETY OF M
MONDAY, Oct. 23rd.-
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TUESDAY.—5 P.M.,
Diagnosis of
Dr. W. Stobie,
and Dr. R. R.
WEDNESDAY.—5 P
R. T. Leiper:
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THURSDAY.—8.30
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operation which have

Hosp. Gaz., 1931.
1933, ii, 1164 and 1223.

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been too ignorantly ascribed to cardiac,
or renal failure, or to what is loosely called
Medicine has already taught us that this
risk is due to dehydration, anæmia,
impaired function of the liver and kidneys,
circulatory failure immediately preceding
due to an aggravation of or persistence of
of these conditions. Dehydration
concentration of the blood and diminishes the
pheral circulation. Anæmia lowers the blood
interferes with tissue respiration, and
accumulation of carbon dioxide. Toxæmia
protein destruction and increases the work of
kidneys. In jaundice there is a retention of
in the kidneys. The acid-base balance of the
is maintained by respiration, renal
neutralisation by the buffers of the blood and
fluids, and by internal secretions such as

Further, medicine has taught us that clinically
important acid-base changes in the blood are
primary alkali excess or defect. Alkali excess
occur in the intensive alkaline treatment of
ulcers; acid loss may be due to the vomiting of
intestinal obstruction or to too frequent
lavage causing the chlorides of the blood to be
by bicarbonate. Primary alkaline defect is
the retention of ketone acids derived from fats
to lack of carbohydrate or inadequate oxidation
lack of insulin, and the common causes of
in surgery are starvation, anæsthesia,
pyrexia, and diabetes mellitus.

The symptoms produced by alkali defect
hyperpnœa, dehydration, and tachycardia.
headache, nausea, and dyspnœa begin to
when the alkali reserve is seriously encroached
General anæsthesia may cause circulatory failure
acid-base upset. Ether poisons the tissues,
hyperglycæmia, and by its solvent action on the
the blood may bring about acidosis if there
deficiency of sugar. Hence in upper
obstruction it may be useful to give a 5 per
solution of glucose intravenously at the rate
drops a minute—which is 6 pints in 24 hours—
a period of days. In emergency operations
of 10 per cent. glucose can be given, with 10
units of insulin hypodermically ten minutes after
infusion is started and at the end. Ten per
glucose is a diuretic so that water and saline
administered per rectum.

Blood transfusion attacks the problem of acid
balance at its source. When circumstances
it is desirable that the patient should have at
4½ million red cells before the operation.
for blood transfusion are a low red cell count,
hæmoglobin content, low blood pressure, and a
or exhausting illness. When clinically we know
the function of the liver may be impaired,
glucose are valuable. A mounting bilirubin
increases the tendency to bleeding. Under
circumstances a blood transfusion is better
5 c.cm. of 10 per cent. calcium chloride before
tion. If the duodenal tube is used the
of fluid given by the mouth need not be restricted.
Depletion of blood chlorides can be made up
intravenous injection.

The physiological researches of Mellanby
suggest that vitamin A is a specific against
of mucous membranes; if vitamin A is
broncho-pneumonia may develop. The prevention
post-operative lung complications is also
by systematic deep breathing before and after
tion, since there may be relaxation of the
after operation. Post-operative lung
atelectatic areas may be prevented by giving
cent. CO_2 in oxygen for ten minutes in each
several hours.

After operation, I think, the surgeon often
more help than he gets from the physician in
the patient's moral and physical stamina.

Infection and Immunity

The introduction of vaccination by Jenner at
end of the eighteenth century brought forward

idea of immunity to specific diseases, and the development of Pasteur's researches has given us serum diagnosis and treatment. Koch, again, isolated bacteria from the diseased host and developed the morphological side of bacteriology. Koch, Ehrlich, and Almroth Wright are all physicians to whom surgery must always be grateful. Even those who think that physicians may go too far in ascribing every disease to focal sepsis, and that vaccines are either ineffective or dangerous, must admit the value of antigens and serum in the treatment of diseases such as tetanus, typhoid, in contaminated wounds, and in the toxæmia of acute obstruction, and of peritonitis with ileus.

Lord Lister's experiments to explain the inflammatory and putrid processes in wounds established that diseases are caused by living organisms, and revolutionised the principles of surgery by the introduction of the antiseptic system. The medically minded Lister was born about one hundred years after John Hunter, and to him surgery owes the two great principles of prophylaxis and treatment. The first principle that all wound infections can be prevented by excluding the access of bacteria is of universal application. The second principle that antiseptics are of use when applied to infected wounds is not of universal application, because we have yet to find a method of wound treatment which will always destroy the organisms in and around a wound without injuring the tissues.

Surgery, however, has been made so safe by the methods of Lister that it behoves us to remember that the surgeon cannot kill microbes with the scalpel. It is only the natural power of resistance and recovery which makes surgery possible. The scalpel is an excellent scavenger at the later stage of an infective process when there is pus under tension, but we surgeons are apt to forget that it may be a dangerous weapon to use at the height of the infection before the natural power of resistance and immunity has developed.

Preventive medicine has diminished surgical diseases due to gross dirt and specific infections, such as tuberculosis, but more remains to be done. Most of the patients seen in surgical clinics have disabilities due to faulty habits, unsuitable environment, and defective hygiene. These disabilities often overshadow those due to gross organic disease and often make it desirable to delay surgical treatment until they have been to some extent overcome. The most prominent symptoms due to unhygienic living, and especially to faulty nutrition, are lack of resistance to infection, asthenia, and nervous irritability. Clinical experience shows that dyschezia from habitual neglect to obey the stimulus to defæcate is an important cause of symptoms which mimic appendicitis, gall-stones, and peptic ulcer; and the correct treatment of this common disorder needs much more attention from our medical colleagues.

The practical surgeon readily recognises the latest advances resulting from direct endeavours to improve his art. It is equally important to realise those which have resulted and may result from great movements in science and philosophy. In these there is no finality; the results of scientific research, at first regarded as unpractical, have and will continue to have a great and beneficial influence on the progress of all forms of surgery. By them unnecessary operations will be eliminated, and necessary operations will be made safer by showing us more direct and less crude methods.

COLONIES, PROTECTORATES, AND DEPENDENCIES

A WEALTH of valuable information about health conditions in the individual colonies within the British Empire may be found in the annual medical and sanitary reports issued by the various colonial governments, but very few libraries in Great Britain or the Dominions and Colonies have complete files of these publications, so that the information they contain is not easy of access. Some kind of authoritative summary of these periodic medical reports has therefore long been needed, and the Bureau of Hygiene and Tropical Diseases has recently taken over the responsibility of preparing such summaries and issuing them as special supplements to its *Tropical Diseases Bulletin*. So far two such annual supplements dealing with the reports for the years 1929 and 1930 have appeared. A third supplement to the *Bulletin* for October, 1933, has just been published,[1] summarising the "Medical and Sanitary Reports from British Colonies, Protectorates, and Dependencies for the Year 1931." It contains detailed summaries written by Dr. H. Harold Scott, the assistant director of the Bureau, of reports from 49 colonies, mostly tropical or sub-tropical, and follows a general arrangement, giving for each country the year's record of vital statistics, maternity and child welfare work, school hygiene, general sanitation, housing and town-planning, &c., followed by particulars of the incidence of diseases such as malaria, enteric fever, leprosy, yellow fever, trypanosomiasis, yaws, and syphilis, and the measures taken locally to combat them. Information is also given about special health campaigns, and investigations carried out in the various government laboratories, or in the field into problems associated with diseases met with in the particular colony.

The compilation thus provides a means for analysing the various factors that affect the physical well-being of European and native communities throughout the scattered colonial empire, and records the organised efforts of the various administrations to improve the health conditions in their own localities. Its primary objective is to keep medical and research officers and administrative officers in any one region informed of work done in other parts of the Empire, but the information it contains should also prove useful for those visiting the Colonies and Dependencies for pleasure, or those who are intending to reside and take up work there, in that they may see what are the prevalent diseases they may meet with and take precautions against, and the present state of health of the countries in which they propose to sojourn.

The supplement should be of value also to those who, though themselves living in England or other temperate climates, do business in the Colonies, more particularly insurance offices, actuaries, and the like. For the more ready conveyance of information of a kind likely to be required by this latter class of reader a table has been added, giving in more succinct form the vital statistics and other cognate data relating to the various Colonies.

NEW PREPARATIONS

CRINEX.—This preparation is put on the market by the Continental Laboratories, Ltd., 30, Marsham-street, London, S.W., and is described by the manufacturers as a total extract of ovary, rich in folliculin. It is a liquid preparation, active when given by the mouth, thus possessing certain obvious advantages of administration, while its therapeutic indications are the various conditions produced by partial deficiency or total lack of ovarian secretion. The range of utility thus indicated is very large, including the symptoms connected with functional insufficiency of the ovary during the active life of the woman, dysmenorrhœa, amenorrhœa, and numerous psychoses. There can be no universal dosage for the treatment of a lack of ovarian hormones, and the details of dosage must be determined by the doctor in relation to the progress of the case, but the manufacturers have information leading them to emphasise the advantage of taking the drug between meals.

VI-TONE.—This preparation was advertised in our pages last week, when the price of the 1 lb. tins was stated to be 3*s*. 2*d*. The price, we are informed, should have been stated as 3*s*.

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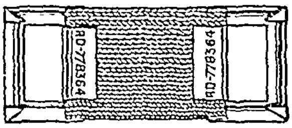
[1] Tropical Diseases Bulletin, vol. xxx., suppl., pp. 238, 5s.

A BANDAGE FASTENER.—Messrs. R. A. Smith and Co., 30, City-road, London, E.C.1, have sent us their "Rasco Lightning Bandage Fastener" which gets over difficulties sometimes encountered in bandaging. The fastener is a piece of elastic with a small metal clasp at each end. On the nether side of each clasp (as illustrated) there are two little teeth, and these bite into the bandage. When attached the fastener yields to some extent to expansion of the bandaged part and contracts on relaxation, thus eliminating constriction yet holding the dressing firm. The upper sides of the clasps are smooth and do not catch in clothes or other material which may be worn over them. The fasteners can, it is stated, be sterilised by boiling. They cost 4s. per gross and may be obtained on cards in dust-proof envelopes (three fasteners for 2d.). They are being sold by Messrs. Down Bros., Ltd., London.



DEEP X RAY THERAPY.—Mrs. O'Brien-Beadon, M.B. (Blackrock, Co. Cork), writes: I should be grateful if any reader can inform me if peripheral neuritis occurs as a result of deep X ray therapy; and if it does, how many weeks after the exposures does the neuritis develop. Is it likely that after deep therapy for recurrent growth in the groin peripheral neuritis would develop in corresponding foot and leg? What is the prognosis, and is there any treatment?

CODEINE AND DIONIN TABLETS.—Referring to his announcement (dated Sept. 18th) of the extension of control to methylmorphine (codeine) and ethylmorphine (dionin) and their salts, the Home Secretary says he has been advised that pills and tablets that contain the drugs compounded with any other substance are to be regarded as outside the provisions of the Dangerous Drugs Acts.

VACANCIES: A CORRECTION.—On p. 902 of our last issue it was wrongly stated that applications are invited for the post of medical officer of health for Walsall. The vacant appointment is at Wallasey, not Walsall, and the conditions governing it are those announced in the advertisement columns in the same issue.

H. Q. R.—An address to which a reply can be directed must be furnished. The matter being individual, the real name need not be disclosed.

Vacancies

For further information refer to the advertisement columns

Aberdeen, Rowett Researc £600–£800.
Ashton-under-Lyne Distr. rate of £150.
Belgrave Hospital for S.W.—Asst. Physician. 50 gns.
Bradford Royal Infirmary.—H.P. and two H.S.'s. Each at rate of £135.
Constance-road Institution, East Dulwich, S.E.—Asst. M.O. £250.
Croydon Mental Hospital, Upper Warlingham.—Third Asst. M.O. £350.
Durham County Hospital.—Two H.S.'s. Each £150.
East London Child Guidance Clinic, Woburn House, Upper Woburn-place, W.C.—Hon. Clin. Asst.
Evelina Hospital for Sick Children, Southwark Bridge-road, S.E.—Hon. Dental Surgeon.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. At rate of £100.
Ilford, King George Hospital.—H.P. and H.S. Each at rate of £100. Also Asst. Ophth. Surgeon.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
Kidderminster and District General Hospital.—H.S. £150.
Lancaster Royal Infirmary.—Jun. H.S. £130.
Lincoln, Bracebridge Mental Hospital.—Fourth Asst. M.O. £350.
Leeds, Herzl Moser Hospital, Leopold-street.—R.M.O. £200.
Leicester Royal Infirmary.—Two Res. Anæsthetists. Each at rate of £150.
Liverpool Women's Hospital, Catharine-street.—H.S. At rate of £100.
London Jewish Hospital, Stepney-green, E.—Res. M.O. and H.P. Also Cas. O. Each at rate of £150. Also H.S. At rate of £100.
London University.—Sir William Dunn Chair of Pathology at Guy's Hospital. £1400.
Lowestoft, St. Luke's Hospital.—Asst. M.O. £350.
Manchester, Ancoats Hospital.—Radiological Officer. £300.
Manchester, Christie Cancer Hospital and Holt Radium Institute, Withington.—Res. M.O. At rate of £150.
Manchester Ear Hospital, Grosvenor-square, All Saints.—Res. H.S. £120.
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—Sen. H.S. £130.
Midhurst, Sussex, King Edward VII. Sanatorium.—Med. Supt. £1000.
National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Hon. Orthopædic Surgeon. Also Registrar, and Asst. Registrar. Each £200.
Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital—H.S. At rate of £200.
Portsmouth Education Committee.—School M.O. £500.
Portsmouth, Saint Mary's Hospital.—Two Sen. and Two Jun. Asst. Res. M.O.'s. £350 and £250 respectively.
Queen Mary's Hospital for the East End, E.—Hon. Asst.
d Dispensary.—Jun. H.S. £200.
Hospital.—Asst. Res. M.O. £200.
Royal Chest Hospital, City-road, E.C.—Res. M.O., and H.P. At rate of £150 and £100 respectively. Also Med. Reg. At rate of £50.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
St. Albans, Hill End Mental Hospital.—Third Asst. M.O. £350.
St. George-in-the-East Hospital, Raine-street, Wapping, E.—Asst. M.O. £250.
St. Helens Hospital, Lancs.—Jun. H.S. £150.
St. Panc —Asst. M.O. £250.
Salford n. Asst. Res. M.O. £200.
Sheffield of £80.
Sheffield and Demonstrator of
M.O. £250.
Victoria Hospital for *Chelsea, S.W.*—Hon. Physician t
Victoria Hospital for *helsea, S.W.*—Sen. Res. M.O. £200.
Wakefield, West Riding of Yorkshire County Council Public Health Laboratory.—Asst. Bacteriologist. £500.
Willesden Urban District Council.—Ophthalmic Surg. 2½ gns. per session.
Winchester, Royal Hampshire County Hospital.—Res. Surg. O. At rate of £200.
Windsor, King Edward VII. Hospital.—Hon. Asst. Anæsthetist.
Wolverhampton Royal Hospital.—H.S. Also H.S. to Orthopædic and Fracture Dept. Each at rate of £100.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Hamilton, Lanark.

Births, Marriages, and Deaths

BIRTHS

BLAIKLEY.—On Oct. 10th, at Welbeck-street, W., the wife of John Barn

MCCOMAS.—On dworth, Notts., the wife of ., of a daughter.

SCOTT-MONCRIE ritish Columbia, the wife of Dr. Ronald Scott-Moncrieff, M.D. McGill, of a son.

THORNTON.—On Oct. 9th, at Devonshire-place, W., the wife of Dr. Conyngham Thornton, *M.C.*, M.B., Ch.B., of Bombay, of a daughter.

MARRIAGES

ALEXANDER—CROWDER.—On Oct. 14th, at St. Michael's Church, Mere, Wilts., Bernard William Alexander, M.R.C.S. L.R.C.P., to Bertha Mary, elder daughter of the Rev. A. E. Crowder, Mere, Wilts.

GANNER—BEALE.—On Oct. 6th, at Edgbaston Old Church, Philip Joseph Ganner, F.R.C.S., to Claire Marian, daughter of Mr. and Mrs. H. K. Beale, of the Elms, Edgbaston.

MOORE—LAWSON.—On Oct. 10th, at St. Paul's Church, Chalfont St. Peter, Edmund Hugh Moore, D.S.O., M.B., to Jean Mary Lydford, elder daughter of Mr. and Mrs. Gavin Lawson, San Gerardo, Chalfont St. Peter.

DEATHS

FOWLER.—At 8, Midmar-drive, Edinburgh, on Oct. 4th, 1933, William Hope Fowler, C.V.O., M.B., Ch.B., F.R.C.S.E., M.R.C.P.E., F.R.S.E.

JAGO.—On Oct. 10th, 1933, at Castle Green, Appleby, Westmorland, Thomas Jago, M.R.C.S., aged 83.

LONG.—On Oct. 12th, at a London nursing-home, following an operation, Harold Octavius Long, M.R.C.S., L.R.C.P., of Dene End, Highgate, N.6, aged 38.

MCCAUSLAND.—On Oct. 9th, at Princes Mansions, Folkestone, R. Boulton McCausland, M.D., F.R.C.S.I., late of Merrion-square, Dublin.

MCELNEY.—On Oct. 12th, in Liverpool, Ariel Ransford Stewart McElney, M.B., Ch.B. *Liverp.*, wife of John Harold McElney, M.B., Ch.B. Edin., of Hong-Kong.

MCFARLAND.—At the Bromhead nursing-home, Lincoln, on Oct. 7th, John Beattie McFarland, *M.C.*, B.A., M.R.C.S., L.R.C.P., age 42, son of the late Dr. Beattie McFarland, of West View House, Lincoln.

NELSON.—On Oct. 8th, at a nursing-home, William Ernest Nelson, O.B.E., M.R.C.S., L.R.C.P., J.P., aged 62 years.

ROBSON.—On Oct. 12th, in a London nursing-home, Sir Arthur William Mayo Robson, K.B.E., C.B., C.V.O., D.Sc., F.R.C.S., in his 81st year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

THE CLINICAL SIGNIFICANCE OF VERTIGO *

Y C. P. Symonds, D.M. Oxf., F.R.C.P. Lond.

PHYSICIAN FOR NERVOUS DISEASES TO GUY'S HOSPITAL; ASST. PHYSICIAN TO THE NATIONAL HOSPITAL, QUEEN-SQUARE; NEUROLOGIST TO THE CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL

"It may here be remarked that the term 'vertigo' is ften used somewhat loosely. I do not take the expression giddiness' from a patient's mouth always to mean true iddiness. We have to put down not his name for, but he description he gives of, the sensation he calls giddiness." Hughlings Jackson.[1])

As the type which will best serve as a foundation or the practical study of vertigo I propose to take he sensations of disturbed balance described by atients suffering from labyrinthine disease. I have herefore reviewed the notes of 100 patients with eafness, tinnitus, and giddiness, in whom the xclusion of any more central lesion justified the ssumption of a labyrinthine cause and whose ensations I have recorded in their own words. These provide the description of 160 attacks or phases of giddiness for study. The majority of these all readily into one or other of the following groups.

Types of Vertigo

I.—EXTERNAL OBJECTS APPEAR TO MOVE

The largest group (56) is that in which there was false sense of movement of external objects, the ufferer himself remaining, and appearing to himself o remain, stationary. The external objects may eem to move in any plane, and the movement may be linear or rotary. The sensation is as a rule described as being abrupt in its onset and is relatively brief in its duration, which is usually counted in minutes rather than in hours. The most severe attacks are sometimes the briefest.

The description most easily elicited is that of things spinning or moving in a horizontal plane from left to right or vice versa, not I think necessarily because this is the most frequent experience but because it is the most easily described. Next after this in frequency is the sense of objects rotating, clockwise or counter-clockwise. A sense of vertical movement of the surroundings is apt to cause some degree of mental confusion, and likely to be attended by a fall, which then becomes the centre of attention. For these reasons a clear description of movement of external objects in this direction is not often forthcoming. The sense, however, of the floor or pavement rushing up to meet the patient may occur without falling. A sense of movement in the reverse direction is invariably accompanied by falling if the patient happens to be on his feet. If he is sitting or lying he is in a better position to describe such sensations which may be rotary as, for instance, the electric light globe in the ceiling rushing downwards towards the floor, or linear, as in the description of a patient who, while sitting, observed the walls to be falling and the floor giving way, the whole episode lasting but a minute and seeming to him like an earthquake.

Sensations of forward or backward movement in the horizontal plane would seem to be rare. I have only two accounts of a sensation which might come within this category: that of objects "suddenly moving away," given by one patient; and from another, the sense whenever she opened her eyes of things going forward. Movement in an oblique plane was clearly described by two patients, one of whom said that everything began to revolve from left to right with a downward inclination; the other, "everything shoots from left to right and up."

Sensations are frequently described which are less definite and yet sufficiently clear for inclusion within this group. Thus objects may be described as whirling, spinning, or moving from side to side without any definite account of plane or direction. A sense that everything is moving up and down is commonly described, or that surrounding objects suddenly seem to move or rock.

One patient, a woman of 55 with left-sided deafness and tinnitus of several years' duration, thus described two attacks.

> The first occurred while she was playing bridge. Suddenly the room "wouldn't stay still." The sensation lasted ten minutes, after which she found herself wobbly on her legs. The second attack occurred after breakfast. She felt sick and the room seemed to move, the floor going up and down. She held on to a support and later went back to bed suffering from epigastric discomfort. She found herself unsteady on her legs for the next day or two.

I have described this woman's symptoms in detail because I am coming to the point at which detail is important for the sake of clear definition. In the analysis of the descriptions given by patients a line must be drawn between what we are prepared certainly to call vertigo, and that which is probably of the same nature, but, owing to the slightness or brevity of the sensation, or a lack of introspective or descriptive power in the patient, is less certainly to be included. It is at this point that we take into account symptoms which we know to be commonly *associated* with true vertigo. The patient whose sensations I have described had tinnitus and deafness —symptoms which are in themselves indirectly of value. For the moment, however, I want to exclude these symptoms from consideration as being remotely, rather than immediately, associated with the sensation of the attack. The immediately associated symptoms of value in the story are the account of nausea in the second attack, and *after* each attack unsteadiness on the legs which persisted for some hours. The latter symptom in particular is of significance in determining the inclusion of minor sensations within the true limits of vertigo.

I would include therefore under the head of true vertigo not only those false sensations of movement in external objects, whose characters are clearly described, but any such sensation of movement—even if vaguely described—provided that the onset of the sensation is abrupt, that its duration is brief, and that it is followed by a sense of unsteadiness on the legs.

II.—THE PATIENT FEELS THAT HE MOVES

The second group comprises those attacks, 27 in number, in which there was a false sense of movement of self, without actual movement, and without any sense of movement in surrounding objects. These sensations are more variously described than those of Group I. Sensations of spinning or of falling in any direction are common, and the sensation of going downward, as if sinking through the floor, going down in a lift, or falling through space is described. One patient described this as a sensation of "falling right out of everything." If in bed the patient will describe a sense of rolling to one side or the other, or if he is sitting the chair may appear to topple.

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* The annual address for 1933, delivered at the Central London Throat, Nose and Ear Hospital on Oct. 6th.

The sensation is often one of passive movement, as if the sufferer is whirled round and round by an invisible force or pushed in various directions. Sometimes the sensation is referred to the head only, which may seem to go round and round or to fall or be pushed one way or the other. One patient spoke of his head "rushing forward," so that he thought it was going down between his legs.

Experiences of a less definite character are a sense of swaying, rocking, or falling without any particular direction. Here again abrupt onset, brief duration, and aftermath of unsteadiness warrant the inclusion of slight attacks within the limits of vertigo.

III.—COMBINATION OF THE ABOVE

Occasionally sensations of the types described in Groups I. and II. may occur together without any *actual* staggering or falling. This, however, is unusual. The combination of a sense of movement of external objects and of self as a rule indicates a severe disturbance, and if the patient is upright he will stagger or fall.

IV.—THE PATIENT REALLY MOVES

The fourth group includes attacks in which there is actual movement of self—the patient staggers or falls. This experience was described in 25 instances, and in nine of these there was a simultaneous sense of movement in the surroundings. This combination may be regarded as the most distinctive of all forms of vertigo, but the movement of self, with falling or fear of falling, may occupy the sufferer's attention to a point at which the sensation of movement in the surroundings is relegated to the background. The memory of its occurrence therefore may be elicited only by direct question. The fall—without sense of movement in the surroundings—which occurs as the result of labyrinthine disorder, is sometimes distinguished with difficulty from falling from other causes; for instance, attacks of syncope, petit mal, or cataplexy. The most important point of evidence in favour of vertigo is the existence *after* the attack of a subjective or objective disturbance of equilibrium.

Thus one patient had had one or two attacks which she referred to as giddy turns, in which "quite suddenly I feel I'm going, my knees give way and I fall." Associated with this there was no loss of consciousness, nor any abnormal feeling in the head, but after she had been helped up the patient noticed that her balance was not quite right, and this feeling would persist for two or three hours. The aftermath justifies the inclusion of such an attack within the limits of vertigo.

In some instances the falling is associated with sensations of impulsion from without of a kind that have already been described and which are themselves of definite value, for example, a sensation as of being hit on the back of the head in association with falling forwards; a sudden fall to the left as if hit under the jaw. In other circumstances the sensation is less decided—the patient may describe himself as falling as if shot.

Staggering or lurching of sudden onset allows of clearer description by the patient. The sensations are those already mentioned in Group II., but are associated with actual movement short of falling.

OTHER VERTIGINOUS SENSATIONS

The phenomena so far described may be grouped together as falling within the definition of vertigo oposed by Gowers, who used it as a "designation for any movement or sense of movement, either in the individual himself or in external objects that involves a defect, real or seeming, in the equilibrium of the body." [9]

There are other symptoms encountered in patients with labyrinthine disease which cannot be accepted under the head of vertigo as thus defined, but are so nearly related to it both in their quality and in frequency of association that they call for description and classification.

I have already referred to the sense of unsteadiness on the legs which so frequently occurs after an attack of vertigo that its presence after an attack of doubtful nature may be decisive. The patient in this condition complains of a general sense of uncertainty in his equilibrium, of which he can give no other description than that conveyed by the word giddiness. Distinctive features, however, are often apparent in the relation of this sensation to movement and posture. It is commonly absent at rest and present on walking when it is associated with fear of falling and often with general loss of confidence. It is frequently related to particular movements, and especially movements involving the head. The complaint will then be of giddiness "on turning round quickly," "if I lift my head or move it to one side quickly," "on looking down or turning my head quickly to the left," and so on. Of the 100 patients in this series 37 complained, in terms which showed little variation, of symptoms of this kind. We have here a symptom so distinctive and occurring with such frequency in labyrinthine disease that, although it cannot be included under the term vertigo, it ranks high in diagnostic value among what we had perhaps best call vertiginous sensations.

Such vertiginous sensations may occur not only as an aftermath of vertigo, but independently of it in the course of labyrinthine disease, and as such are of frequent occurrence. We may therefore encounter phases (not necessarily with an abrupt onset) in which there is a continued liability to giddiness on walking or on movement of the head. Such phases may be of brief or of long duration, but at most their term is one of days.

There are other symptoms which are frequently associated with vertigo in labyrinthine disease and are of great interest. I shall return to these later. At the moment I wish to follow vertigo and vertiginous sensations as so far described along the path indicated by anatomy and physiology, inquiring in what situations, other than the labyrinth, disease or disordered function may give rise to similar sensations.

Vertigo in Lesions of the Nervous System

LESIONS OF THE EIGHTH NERVE

Judging from analogy we should expect lesions of the afferent pathway from the labyrinth to cause symptoms comparable with those arising from disease of the end-organ. Unfortunately for purposes of our inquiry the diseases—neoplastic or inflammatory—which commonly involve the vestibular nerve in its intracranial course are bound, sooner rather than later, to affect the functions of the vestibular nuclei and their central connexions by interfering with the circulation of the brain stem. Probably for this reason persistent and continuous vertiginous sensations taking the form of unsteadiness or a sense of unsteadiness in walking are an almost constant feature of subtentorial tumours.

The question of the frequency of actual attacks of vertigo in relation to the situation of intracranial tumours is of some interest. Mr. Hugh Cairns has very kindly helped me in an attempt to answer this question, not only placing the whole of his material at my disposal but collaborating in its analysis. We have thus been able to inquire into the frequency of vertigo in tumours of the cerebello-pontine angle, cerebellum, brain stem, and cerebrum, in a series of cases in which the situation and nature of the lesion has been verified, the history has been taken by the same observer throughout, and the absence or presence of such sensations has been systematically recorded.

The frequency of vertigo in tumours of the cerebello-pontine angle has been variously estimated. Stewart and Holmes [2] in 1904 declared that in their experience vertigo was one of the most constant symptoms of extra- and intra-cerebellar tumours, and was especially frequent in the former. Sydney Scott [3] has stated that in unilateral eighth nerve tumours, vertigo and staggering are constantly present, though these symptoms are not so violent as might be expected. On the other hand, Cushing,[4] in his series of 33 acoustic tumours, published in 1917, noted the occurrence of vertigo only in 5 cases.

In Cairns's group of cerebello-pontine angle lesions there are 16 cases of tumour and one of arachnoiditis localised in the right cerebello-pontine angle. Of the 17 patients 9 gave an account of vertigo. In four instances there was a sense of movement of external objects only, in four a sense of movement of self only, in the other instance both sensations occurred. Eleven of these patients had eighth nerve tumours. Six of these had vertigo. In two of them the symptom was an early one. In one case it was the first symptom. The patient was playing tennis when he felt everything revolving round him, and had to sit down on the grass. Before the actual attack he felt that the ground was coming up at him—a sensation he compared with that of the "witching waves" of fair grounds. The attack lasted two minutes. He thinks objects revolved in front of him from left to right. Afterwards he could not walk straight.

Vertigo then would seem to be an inconstant and on the whole a late symptom of tumours in the cerebello-pontine angle, even eighth nerve tumours. It is arguable that when this symptom does occur it is due rather to compression of the pons than of the vestibular nerve. That this nerve may be severely handled without the production of vertigo is shown by Dandy's [5] observations on the result of section of the eighth nerve for the relief of labyrinthine vertigo. In two out of three cases, in which the nerve was divided under local anæsthesia of the superficial tissues only, the patient was not conscious of any sensation, either when the nerve was being liberated from the surrounding tissues or when it was divided. In the third there was transient vertigo while the nerve was being manipulated, which disappeared when it was severed. Such instances provide a striking contrast between the effects of stimulating the end-organ and the nerve-fibres leading from it.

LESIONS OF THE BRAIN STEM

The vestibular nuclei and their central connexions in the brain stem are liable to damage from vascular lesions which provide opportunity from time to time for precise anatomical localisation. Vertigo is a conspicuous feature of the clinical syndrome of posterior inferior cerebellar thrombosis, and in its intensity and persistence exceeds the worst attacks of labyrinthine origin. Lesions of relatively acute development, such as those of disseminated sclerosis and encephalitis, may give rise to vertigo almost as severe. Tumours of the pons and medulla, though invading the same structures, may give rise to little or nothing in the way of vertigo. In Cairns's series of nine patients with verified tumours of this region only four admitted symptoms of this kind, and in only two of these did it amount to definite vertigo.

It seems then that the occurrence of vertigo in lesions of the brain stem depends largely upon the rate of evolution of the lesion as well as upon its localisation. Vertigo occurring as a symptom of a tumour in this region probably indicates a phase of congestion or œdema of recent development.

LESIONS OF THE CEREBELLUM

Vertigo is commonly regarded as an important symptom of cerebellar disease.

Lesions of vascular or non-suppurative inflammatory origin are practically never confined to the cerebellum but involve the brain stem. Our records of vertigo in association with disease limited to the cerebellum are therefore mainly derived from the symptoms of tumours in this situation, and are subject to the suspicion that the disturbance of function may have arisen in the structures of the brain stem as the result of pressure changes.

That vertigo is at any rate an inconstant symptom of cerebellar tumour is shown in the analysis of 38 cases in Cairns's series. Vertigo is recorded as having occurred in 17 of these, transient sensations of giddiness in another 5, while in the remaining 16 there was no record either of vertigo or vertiginous sensation. The later view of Gordon Holmes [6] is thus confirmed that "it is striking that many patients with tumours of the cerebellum never complain of giddiness, and in other there may be little or no sensation of movement of self or of external objects."

It should perhaps be added that in the series of patients just mentioned, 17 proved to have tumours mainly, if not entirely, confined to the middle lobe, and 11 of these were recorded to have had vertigo, whereas of the 21 patients with lateral lobe tumours only 6 complained at any time of this symptom.

LESIONS OF THE FOREBRAIN

Though we are ignorant of the connexions which presumably exist between the vestibular nuclei and the cerebral cortex, we are familiar with the occurrence of vertigo as an epileptic aura. Gowers [7] writes of his series of 1145 cases of epilepsy in which some aura existed that "in no less than 18 per cent. of the warnings the aura was sudden vertigo, generally definite."

The sensation may be of movement of external objects or of self, or there may be actual rotation or falling just as in labyrinthine disease. The vertigo which is of brief duration may be the precursor of convulsion, it may end simply in loss of consciousness, or it may occur alone as in the case of other epileptic auras without the development of an attack. It is, however, never followed by those vertiginous sensations—unsteadiness on walking or on movement of the head—which are the common sequel of vertigo arising from disturbance of function at the lower levels.

Our main source of information as to the relation of vertigo to the situation of organic disease of the forebrain is again derived from cerebral tumours. Ill-defined sensations of giddiness are common in all cases of supratentorial tumour during phases of increased intracranial pressure. True vertigo is however an uncommon symptom in tumours of the forebrain.

This symptom, having been especially looked for in Mr. Cairns's series and indexed when found, we discovered to have been present in 13 out of 242 supratentorial tumours. In five of these the situation was frontal; in three it was parietal; in two temporal. Of the other three cases one was a suprasellar cyst, another a suprasellar aneurysm, and the third a right-sided subdural hæmatoma. Sensations of movement in the surroundings and of self, and actual falling were recorded. In the case of one patient with a left frontal meningioma vertigo was the earliest symptom. He described his attacks as a feeling as if he was going round and the furniture in the room was going round. He did not fall down but had to hold on to things. The sensation would last for two or three minutes. The first attack occurred when he was riding a bicycle and he fell off.

So far as it is safe to draw conclusions of this kind from the data provided by cerebral tumours, we may infer that vertigo may result from lesions variously situated in the cerebral hemispheres. Holmes[6] states the same opinion and asserts that involvement of the cortex or subcortical white matter is essential.

The conclusions we have so far reached may be briefly summarised as follows. Vertigo of the type frequently encountered in disease of the labyrinth may occur with lesions of the eighth nerve, brain stem, cerebellum, and forebrain. It occurs most certainly with lesions of an acute type in the medulla and pons (vascular lesions, encephalitis, and disseminated sclerosis). The inconstant appearance of vertigo as a symptom of tumours of the cerebellum or cerebellopontine angle raises the suspicion that in such cases it is caused by secondary disturbance of function in the brain stem as the result of vascular congestion. Vertigo as an epileptic aura or with tumours of the forebrain is not as a rule followed by vertiginous sensations of the kind almost constantly encountered when the disturbance has arisen at any of the lower levels.

Labyrinthine Disease

SYMPTOMS ASSOCIATED WITH VERTIGO

I will now return to the consideration of the symptoms which may be associated with the vertigo of labyrinthine disease. *Nausea, vomiting, pallor,* and *sweating* are so frequently encountered that they need no comment. *Diarrhœa,* though it is not a common symptom, may in association with the vomiting lead so easily to an erroneous diagnosis that its occurrence deserves emphasis.

A medical patient has described to me a severe attack of vertigo and vomiting, in which before it was possible for him to move or be moved he was conscious of an increased but painless peristalsis, so vigorous that it resulted in a quite irresistible evacuation. The same observer writes: "Increased peristalsis is common, but is more variable in degree than any other symptom. I had serious trouble from it on only one occasion, but it may be present in quite slight attacks."

Cephalic sensations are divisible into two groups: those which occur at the moment of the attack; and those which may precede or follow it. The latter are extremely common, and are often complained of as headache, though described rather in terms of discomfort than pain—a sense of pressure, stiffness, numbness, or congestion referred to the back of the head or neck, or to the region behind the affected ear. Headache of this kind is not infrequently associated with giddiness among the patient's leading complaints, and may even precede it.

The sensations which may occur at the moment of the attack are described in varied and curious terms, of which the following are examples. "As if a wheel had been turned round at the back of my head," "something suddenly quivering in the head," "as if something moves quickly over my brain," "a sensation like an electric current up the back of my head," "a sensation in the head like that of a revolving dynamo." Often the sensation beggars description and is referred to as a "nasty feeling." One patient gave the following account of minor attacks which would not be accepted under the heading of vertigo, but are nevertheless distinctive of vestibular disturbance. "I have a nasty feeling in my head, think 'that's it,' move my head to see—know I've got it, and must sit still till its over."

That *loss of consciousness* may occur in labyrinthine vertigo is sometimes disputed, but I have met with several instances in which the occurrence appeared beyond doubt. Gowers[8] was of the same opinion.

I have notes of two attacks in this series in which *diplopia* was clearly described by the patient. Gowers,[9] who missed nothing, stated that he had several times known double vision to occur after or during a paroxysm, and Mygind[10] has also recorded this symptom.

Diminished tone on one side of the body is usually confined to the muscles of the neck, causing the rotated position of the head (occiput towards the "affected" shoulder) which, as emphasised by Russell Brain,[11] is, like nystagmus, a common and important sign of recent labyrinthine disturbance. Rarely hypotonia may be observed in the limbs of the affected side and may be appreciated by the patient.

The medical patient from whose account of his own symptoms I have already quoted, described a disturbance of function in the arm and leg which he said "feels like a mixture of slight numbness and slight loss of control. The arm is less affected, or rather the disturbance is less noticeable there, but the leg in walking seems to swing to some extent by its own weight like a pendulum." This in greater or less degree he had observed after several of his attacks.

PATHOLOGY

Upon the vexed question of pathology in labyrinthine disease I shall not venture to embark without reefing my sails. I have hitherto maintained a resolute objection to the use of the term Ménière's disease as opposed to Ménière's syndrome. The latter conveys to me a triad of symptoms—deafness, tinnitus, and vertigo—which indicate disease of the labyrinth or eighth nerve, whatever may be its cause. I perceive, however, that the use of the term Ménière's disease to describe this conjunction of symptoms in cases in which the pathology is unknown has much the same kind of justification as the term idiopathic epilepsy.

Mygind[12] and Dederding[13] propose to use the term Morbus Ménièri "as designating a disease which so far as the ear is concerned shows itself by a varying function both of the acoustic and the static part and with regard to which it has been possible to exclude any specific ætiology." In this sense Ménière's disease is undoubtedly the most frequent cause of vertigo as seen by the neurologist. In this malady or group of patients vertigo may occasionally precede tinnitus and deafness by months or years. It is often conspicuous at a stage in which the rotary and caloric tests of labyrinthine function show no abnormality (Mygind). I venture at this point to express my doubts as to the validity of the claim sometimes made by otologists that a positive response to the caloric tests excludes the presence of intra-labyrinthine disease. Functional tests of this kind are surely coarse in relation to the function they are designed to test. An abnormal response may justly be accepted as proof of disease, but the converse assumption is unwarrantable.

As a sequel of head injury vertiginous sensations are extremely common, and vertigo by no means rare. The former correspond with the sensations already described in connexion with lesions of the labyrinth and brain stem; complaint of giddiness on quick movement of the head is the most frequent and the most distinctive symptom. Both these sensations and true vertigo are apt to follow the injury after a latent interval of several days up to three or four weeks. There is seldom any associated complaint of deafness or tinnitus with traumatic vertigo, and for this reason perhaps the tendency has been to refer this symptom to a lesion of the brain stem. It occurs, however, so often after minor accidents and without any association with other evidence of brain stem contusion that I believe this theory is untenable, and that the lesion must be in the vestibular part of the labyrinth. This view has been discussed and upheld recently by Linthicum and Rand[14] in America, and by Bremer, Helsmortel, Barré,[15] and others on the continent. These observers are unanimous as to the presence of abnormal response to the caloric and rotary tests in a large number (50 to 80 per cent.) of the cases, without any defect of cochlear function. The further investigation of traumatic vertigo by the otologist using objective tests of labyrinthine function is clearly desirable, if only as an aid to diagnosis in compensation cases.

Vertigo in patients with a high blood pressure and thickened arteries is not uncommon. In many instances it is associated with a persistent tinnitus—the noises being complained of as in the head rather than the ears—often of a roaring character. It is presumably due to small vascular lesions which may be in the labyrinth in some cases, and in the brain stem in others.

Borderland Vertigo

It is impossible to leave the subject of vertigo without reference to its occurrence in attacks whose point of origin and causation are equally unknown, which belong neither to Ménière's disease, epilepsy, or migraine, but are related to all three. They are admirably discussed by Gowers in his little book called "The Borderland of Epilepsy."

The difficulty in giving any concise account of this aspect of vertigo lies in the variety of form presented by the attacks and the consequent difficulty of classification.

I have no doubt, from clinical evidence, of the affinity between migraine and epilepsy. The exchange of one for the other in the same patient is not uncommon. Epilepsy, as we have seen, not infrequently has vertigo for its aura. Attacks of a transitional character between vertiginous epilepsy and migraine may possess some of the characteristics of each.

There is also, I believe, a connexion between migraine and Ménière's disease. I have long had this impression, and have been interested to find that among the 100 patients with Ménière's syndrome, taken as a consecutive series in private practice for purposes of this analysis, there are 14 who gave a story of migraine. If all cases (with or without migraine) are excluded from the series in which there was any suspicion of an infective or traumatic origin for the vertigo, there are 11 instances in which the story of migraine was associated with that of Ménière's disease (in Mygind and Dederding's sense) out of a total of 85. The evidence for migraine was in eight cases the occurrence of a characteristic visual aura, and in the remaining three a liability to recurrent sick headaches from childhood with a family history of the same liability. Thus, at the most conservative estimate, a history of migraine occurs in over 9 per cent. of the patients with Ménière's disease.

Two patients had attacks of migraine, epilepsy, and vertigo, with tinnitus and deafness, each variety of attack being quite characteristic.

Thus a man aged 56, whose father and mother had both suffered from migraine, himself had attacks with the usual visual aura up to the age of 40. He then began to have momentary attacks in which "the ground came up to meet him." A few years later he began to notice bilateral tinnitus and deafness, and had several severe attacks of vertigo ("the whole world going round") with vomiting, but no loss of consciousness. On three occasions he had attacks which he recognised as of another quality. He would suddenly lose himself for a moment or two, wonder what was happening, and then remember that what was in his mind was an incident in a dream he must have had at some time—a sensation characteristic of epilepsy.

A story of migraine may also be associated with that of attacks of vertigo without any development of deafness or tinnitus. The vertigo in these cases does not usually take the form of an aura preceding headache, but is an independent occurrence.

Vertigo in "Neurasthenia"

Vertigo, or at least vertiginous sensations, may be the leading complaint in those minor states of mental depression usually called neurasthenic. It is described as an almost continuous sensation of unsteadiness. I cannot give any account of this save by illustration.

A married woman, aged 28, without cause became depressed and frightened, and from the first complained of giddiness "as if I'm swaying and as if my legs were going to give way and let me down." These complaints continued for one year without intermission. She then became quite well and ceased to attend hospital. Fourteen months later she returned stating that she had "felt lovely" until a week previously when again without cause she became frightened, dazed, and irritable. On her father's side an aunt died in a neurasthenic state, an uncle was certified in a state of depression, and a cousin after childbirth has passed through an illness similar to the patient's.

Vertigo in this setting is not uncommon, and is complained of by patient after patient in terms which show little variation. It must surely be regarded as a physical symptom of the illness.

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BELFAST MATER INFIRMORUM HOSPITAL.—In the year ending on June 30th last this hospital treated 2640 in-patients, 58,628 out-patients, and 14,798 accident cases. The out-patient department is reported to be "totally inadequate."

TISSUE CULTURE IN ITS RELATIONSHIP TO SURGICAL PATHOLOGY *

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THE BEHAVIOUR OF CELLS IN VITRO

Dedifferentiation.—Cells which are multiplying freely in vitro have usually an entirely different form from that in the original tissue. They fall into three groups:—

1. *Epithelial tissue* grows typically as a continuous sheet of mosaic-like flattened cells (Fig. 1).
2. *Macrophage system* (reticulo-endothelial system). Cells in this group grow as isolated motile cells, retaining the typical morphology of macrophages in the active or the resting state.
3. *Other mesodermal cells* grow as a network (possibly a true syncytium) of cells resembling fibroblasts; and are usually morphologically indistinguishable from these or one from another. Many workers refer to them indiscriminately as fibroblasts (Fig. 2).

A glance at a culture will usually suffice to show to which group its cells belong, but the most careful scrutiny may fail to reveal their origin within the group. The change of form in culture was formerly ascribed to a permanent reversion to a more primitive type—"dedifferentiation." This term is still applied, but it is realised that the reversion is not permanent or immutable. For instance, the outgrowth from hyaline cartilage is of dedifferentiated cells without matrix, but, if these are grafted subcutaneously into a homologous animal, they redifferentiate into a nodule of typical cartilage cells, lying in a matrix. Furthermore, the fibroblast-like cells derived from various tissues (heart-muscle, bone, cartilage) have a differing physiology, as shown, for instance, by the optimum concentration of embryo extract required for the growth of each. In special circumstances those from the heart show pulsation.

Redifferentiation.—Reference has just been made to the fact that cells which have dedifferentiated in vitro may be made to redifferentiate when replaced in vivo. In certain circumstances they will redifferentiate in vitro. Sometimes differentiation takes place in dedifferentiated epithelial cells when they are brought in contact with mesodermal tissue. An example is provided by renal epithelium, which grows ordinarily as a sheet of cells but forms rudimentary tubules on the addition of a culture of fibroblasts. A. H. Drew (1922) found that the parenchyma of mouse carcinoma 206 growing alone formed sheets, but if accompanied by the growth of stroma it formed acini. This has been considered a specific effect of the mesoderm, but possibly its action is either purely mechanical or through retardation of growth. An analogous phenomenon, explicable on such a basis, is provided by thyroid epithelium. On the surface of a clot this grows as a sheet, but in the substance of such a medium it forms acini containing colloid material. Frequent cellular division, ordinarily essential for longevity in culture, prevents differentiation. Recent developments in technique have made it possible to retard the growth of certain cultures without prejudicing their prolonged survival. In these circumstances redifferentiation has apparently occurred.

Differentiation in vitro.—If a whole embryonic organ is explanted cells grow out freely from the cut portions and dedifferentiate, as has been described. In the explant itself, however, where this "uncontrolled growth" is impossible, "controlled growth" occurs just as in the embryo, but more slowly. At the same time differentiation occurs here almost as rapidly as in vivo. Thus, an explant of early embryonic femur, consisting of undifferentiated cartilage cells and matrix, grows and shows differentiation into large and small-celled cartilage, the formation of phosphatase from the large-celled cartilage, and an encasement of subperiosteal bone. Likewise, in apparent defiance of Wolff's law, the explant undergoes the same changes in shape as it would have undergone if left in its natural environment.

Pure strains of cells.—Some workers have attached great importance to the use of pure strains of cells, as in bacteriology. The usual method of isolation depends on the assumption that repeated subculture in identical media will eliminate all but one variety of cell.

Cellular variation and mutation.—The observation that dedifferentiation is a reversible process and does not imply a permanent modification of cells is true only in a favourable medium. An unfavourable environment may modify cells in such a way that no means are known which will convert them back into their original form. Examples of such an unfavourable environment are provided by the action of potassium iodide, bacterial toxins and some tissue extracts, or by exposure to radiation by X rays or radium. Cells thus permanently modified breed true. It is possible that the cancer cell arises in this way, as a mutation arising in an unfavourable environment. This speculation, adapted to modern genetic views, is at present receiving prominence as the gene mutation hypothesis of cancer.

HEALING OF WOUNDS

In a small wound which heals in a relatively short time the injury damages a few cells, liberating tissue juices which stimulate the neighbouring cells to amœboid activity and multiplication, just as, in vitro, tissue extract will bring about the outgrowth and multiplication of adult cells, which remain quiescent in pure plasma. This mechanism may be preceded by sliding of the edges of the wound towards one another, as is the case with wounded epithelium in plasma cultures.

In an extensive wound, healing by granulation, the initial stimulation by the products of cell injury is negligible in comparison with the extent of the deficiency to be made good; some other mechanism must be conceived. With such a wound there is always an initial latent period (the "calm" or "period of repose" of Paget) during which healing is in abeyance; and, in the case of a superficial wound, the length of this period may be diminished by an irritating dressing. The end of the period and the onset of healing is marked by the congregation of leucocytes in the wound. Their action is presumably to be compared with that of living leucocytes in culture where they provide a substitute for embryo extract in initiating and maintaining growth. C. J. Bond (1918) has shown that living leucocytes encountering a dressing become damaged and adherent to it, and suggests that this is partly responsible for the injury done to granulating wounds by the frequent changing of dressings. Healing, once started in a sterile superficial wound, proceeds in accordance with du Noüy's formula, i.e., is independent of extraneous influences. Infection, with consequent leucocytic infiltration, might be expected to accelerate healing. In fact it does shorten the latent period, though it retards the progress of healing once this has started. This is possibly due to liquefaction of fibrin trabeculæ, as is seen in infected cultures, and to toxins; and Strangeways has compared the cytological abnormalities found in infected wounds with those found in cultures in unfavourable media.

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* Abstract of Hunterian Lecture delivered before the Royal College of Surgeons of England. This lecture will appear in full, with a complete list of references, in the St. Bartholomew's Hospital Reports, 1933.

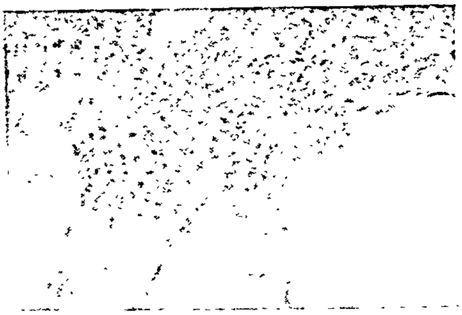


FIG. 1.—Character of growth of epithelial cells (parenchyma of spontaneous mammary carcinoma of mouse, × 110).

A. Carrel and A. H. Ebeling (1921) suggest that delayed healing in the old and in the infirm is a humoral phenomenon. From measurements of the extent of outgrowth of cultures in various samples of blood-serum they concluded that this contains growth inhibiting substances which increase with age, and probably also growth-activating substances which diminish with age. Animals injected with sterile pus showed a diminished rate of healing, and their serum was abnormally inhibiting in vitro.

THE CELLS IN CERTAIN LESIONS OF SURGICAL IMPORTANCE

Round cells of inflammatory foci.—The origin of the lymphocytes and polymorphonuclear cells is not in doubt; they come from the blood by diapedesis. The origin of the congregated macrophages, on the other hand, has long been a vexed question. They are so numerous that it has seemed impossible that they could all be derived from the very scanty large mononuclear cells of the blood or from the clasmatocytes (the resting macrophages of connective tissue) as these show little evidence of mitosis, and the occurrence of amitotic division is doubtful. Tissue culture provides evidence of two sources: (1) the lymphocytes (Maximow), and (2) the fixed tissue cells (Fischer).

Formation of multinucleate cells.—In an unfavourable medium, fibroblast-like cells often tend to become multinucleate. Fig. 3 is an example of such a change occurring in a culture of fibroblast-like cells from embryonic periosteal tissue. Strangeways has described three anomalies of mitotic cell division which produce this phenomenon.

Formation of foreign body giant cells.—In 1912 R. A. Lambert, using lycopodium spores and cotton fibres as foreign bodies, observed the formation in vitro of multinucleate giant cells, apparently by fusion of macrophages. The cover-slip itself was sufficient to produce the change in cells adherent to it. Fibroblast-like cells did not react in the same way. The first observation was confirmed in the following year by S. C. Weil, but he believed that amitotic nuclear division played a part in addition to the coalescence of cells.

Origin of the cells of a tubercle.—The nature of the "epithelioid cells" of the tubercle has long been debated; and, prematurely perhaps, they have been renamed in this country "endothelial cells" on the assumption that they arise from vascular endothelium.

A. Maximow (1924) has demonstrated in rabbit tissue cultures inoculated with human tubercle bacilli, the conversion of macrophages into epithelioid cells, and these into giant cells of tuberculous type. He confirmed H. F. Smyth's observation (1916) that the latter change was mainly by fusion of the epithelioid cells. This is not necessarily the mode of formation of tuberculous giant cells in man. Timofejewsky and Benewolenskaja (1927) whilst confirming the observations on rabbit tissue found that, in the case of cells of human origin, the giant cells were formed mainly by nuclear division in the epithelioid cells, rather than by fusion, and they correlate this discrepancy with the greater susceptibility of human tissues than rabbit to the human type of bacillus, which is observable in vitro as well as in vivo. Some of the tubercle-like areas show central necrosis. Maximow further produces evidence that the toxins responsible for the cellular changes are derived from the bacillus directly, and not from disintegrated cells as some have contended.

Cells of the myeloma. (*Benign giant-celled tumour of bone.*)—This is coming to be regarded as an osteoclastoma; and it has been suggested, by the analogy of tissue culture, that multiplication of the osteoclasts produces the spindle cells by dedifferentiation. The analogy is doubtful, because, while the formation of giant cells in culture is familiar, the reverse—their separation into mononucleate cells—is almost unknown; however, the possibility of such a change cannot be denied, and C. C. Macklin (1916) observed the occasional formation of two mononucleate cells from a binucleate by the fusion of nuclei and subsequent mitosis. In a cinematograph film of a myeloma in culture, prepared by Dr. G. O. Gey, the giant cells have not dedifferentiated, though this might be accounted for by a medium unfavourable to cellular division and therefore to dedifferentiation. This origin of the spindle cells would discount the view of some that the myeloma giant cells are of macrophage type, because such could not be expected to dedifferentiate directly into spindle cells which are typical fixed tissue cells. It is also difficult to derive the giant cells from the spindle cells, which type in culture form a different variety of multinucleate cell, having its counterpart in the irregular giant cell of malignant tumours. That of the myeloma resembles

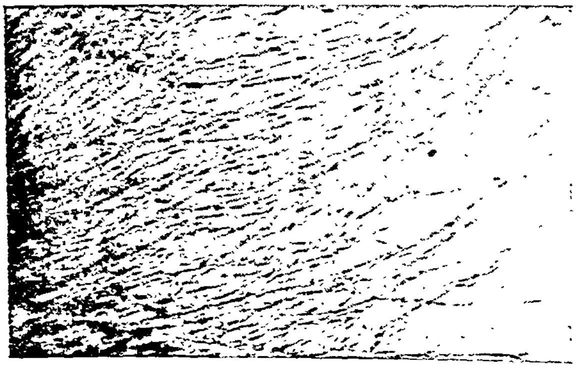
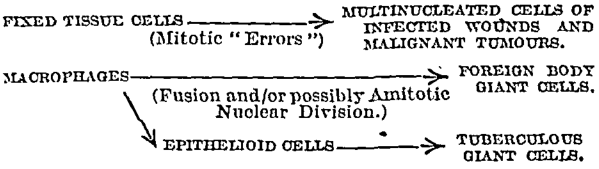


FIG. 2.—Character of growth of fixed mesodermal cells (fibroblast-like cells from embryonic chick heart after 20 years in vitro, × 110. Preparation very kindly provided by Dr. Carrel).

more closely the type which has already been described as formed by macrophages in the presence of foreign bodies. The two, though distinct, are often confused even in tissue culture literature. One concludes that the evidence of tissue culture is contrary to close kinship between the two prevailing types of cell in the myeloma.

The following scheme summarises the formation of various types of multinucleate cells based on the evidence of tissue culture.


FIXED TISSUE CELLS
(Mitotic "Errors")
MULTINUCLEATED CELLS OF INFECTED WOUNDS AND MALIGNANT TUMOURS.
MACROPHAGES
(Fusion and/or possibly Amitotic Nuclear Division.)
FOREIGN BODY GIANT CELLS.
EPITHELIOID CELLS
TUBERCULOUS GIANT CELLS.

Summary of the formation of multinucleate cells from the viewpoint of tissue culture evidence.

MALIGNANT TUMOURS

Human malignant tumours have been grown in vitro for short periods by various workers. The use of human material, however, is attended by considerable limitations and technical difficulties, so that most work has been done with animal tumours, though even these are on the whole less easily cultivated than embryonic tissues. Those which can be propagated by grafting or by the use of a cell-free filtrate have been of particular value.

The parenchyma of carcinomata grows in epithelial columns or sheets, whereas the fibrous tissue stroma gives rise to spindle cells of the usual fibroblast type. The cells of sarcomata, like those of other mesodermal tissues, grow as fibroblast-like cells, mixed usually with a few macrophages in the earlier passages.

Rous sarcoma gives a growth of both macrophages and fibroblast-like cells. The filtrable infective substance is associated with the macrophages and continues to be produced in vitro. Normal macrophages of the fowl can be rendered malignant by the addition of Rous's substance, whereas this has no apparent effect on fibroblast-like cells.

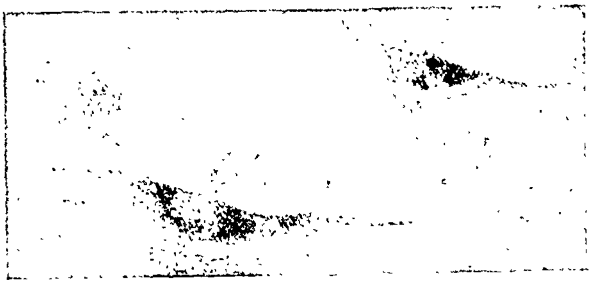


FIG. 3.—Multinucleate cells formed in vitro, × 1000.

Those tumours which may be propagated by grafting do not lose this characteristic during their life in vitro.

While the appearance of malignant tumours growing in vitro is very like that of normal cells, various peculiarities in behaviour have been described. Time has shown that most of these are not specific and they will not be discussed here.

A characteristic of the stroma of carcinomata described by Drew deserves mention. He observed that this, though derived from the adult host, behaved in culture like an embryonic tissue, proliferating abundantly, whereas ordinary adult tissues are grown with difficulty.

CONCLUSION AND PROSPECT

Tissue culture, now a quarter of a century old, has produced no revolutionary discovery, but it has contributed information that was otherwise inaccessible, and this itself is justification for a method often costly and laborious. Insufficient caution has been exercised in attaching in-vivo significance to in-vitro phenomena, and in assuming that knowledge of embryonic cells applies also to adult. While tissue culture in its present form has still much to contribute, rapid strides are unlikely until technique has greatly improved. The inability to produce an intrinsic circulatory system, the use of such inconstant and complex material as plasma and embryo extract, and the impossibility of obtaining and maintaining most types of cells in pure culture, are at present insuperable difficulties in many problems.

THROMBO-PHLEBITIS IN ACUTE RHEUMATISM

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With Clinical Case Notes by

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BERNARD SCHLESINGER, M.D., M.R.C.P.

IN 1840 Bouillaud, in his classical treatise on acute rheumatism,[1] stated that while the occurrence of phlebitis in this disease was not common it was by no means so rare as was usually believed. However, some at least of the cases reported by Bouillaud were obviously not true cases of acute rheumatism, and appear rather to be cases of pyæmia, since the arthritis was described as purulent and pus was also found in other organs.

Schmitt, in a thesis on rheumatic phlebitis,[2] collected 16 cases from the literature up to 1884 and added one he had personally observed. He believed that venous thrombosis was a rare but definite complication of acute rheumatism, and argued that the thrombosis is not due to any change in the vein itself, but rather to some alteration in the blood predisposing to thrombosis. In the same year Letulle[3] described a case and came to the conclusion that phlebitis was a rare complication of acute rheumatism; he thought that while venous stasis from the coexistent heart disease might play a part in the causation of the venous thrombosis, the important factor was an antecedent endophlebitis. Remlinger[4] describes the case of a man, aged 38, who in his first attack of acute articular rheumatism experienced venous thrombosis in the right leg, right arm, and left leg. In each case the swelling of the limb was preceded by pain along the course of the vein affected for one or two days. The swelling subsided fairly rapidly, which in his view suggested that the occlusion of the veins was only partial. At no time was there any evidence of carditis and the patient ultimately made a good recovery. In reviewing the literature Remlinger, too, criticises Bouillaud's cases on the ground that they were really pyæmic in nature; however, he found 18 cases recorded which he was prepared to accept as phlebitis occurring during an attack of genuine acute rheumatism. Gatay[5] in 1895, while criticising Bouillaud's cases on the grounds that the arthritis was purulent, found 17 cases in the literature and reported two more. He noted that pain in the limb frequently preceded any swelling and that the affected vein could often be palpated as a firm hard cord. He describes the histological appearances and states that there is at first an invasion of the wall of the vein by small round cells with proliferation and desquamation of the endothelial lining. The "fixed cells" of the vein wall proliferate and separate the muscle-fibres. He considers that there is no doubt but that the thrombosis is entirely secondary to the phlebitis.

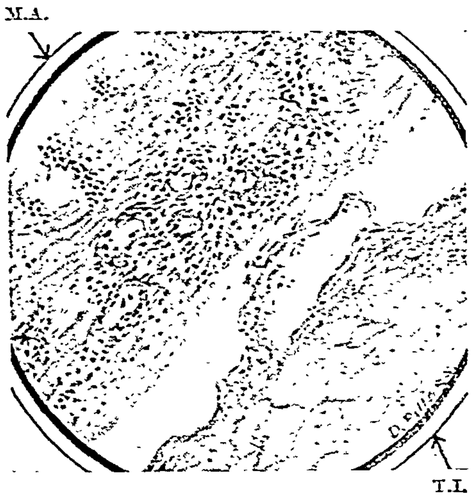

FIG. 1.—A low power view of the thrombosed vein showing part of the wall of the vein and the contained thrombus. The clot has been separated from the vein wall in the process of preparation of the section. M.A. = media and adventitia. T.I. = thrombus and detached intima.

Poynton,[6] in 1898, described the occurrence of extensive venous thrombosis in three children with acute rheumatism and carditis. Histological examination in one case showed early phlebo-sclerosis in the wall of the vein. He held, however, that it was not possible to decide whether venous stasis or a phlebitis was the initial cause of the thrombosis. Garnier,[7] in 1899, reports two further cases in patients with rheumatic carditis, both of whom recovered. He considered that venous stasis consequent upon the carditis was the main causal factor, but admitted that alterations both in the blood and in the vein itself may play a part. Welch,[8] in 1900, reviewed 28 cases of venous thrombosis occurring during the course of cardiac diseases in general, and from the fact that joint symptoms immediately preceded the thrombosis in only three cases believed that, in the cases studied, acute rheumatism played only a minor part. Hess,[9] in 1902, reported two cases, one of which was fatal, with thrombosis of superior vena cava, and left jugular and subclavian veins. Section of the thrombosed vein showed marked infiltration of the wall of the vein and the surrounding tissues with small round cells.

In 1908 Herringham [10] reported on a patient with chronic rheumatic heart disease who developed successive venous thromboses during a relapse of acute rheumatism. She ultimately made a good recovery. Glaser [11] reported a case in 1913 but held the venous stasis, from the heart disease, to be largely responsible. In the first edition of Garrod, Batten, and Thursfield's text-book on diseases of children, Voelcker [12] describes a boy aged 13 with severe chorea but with no evidence of carditis who developed thrombosis in both femoral and saphenous veins, but ultimately made a complete recovery. In a review of venous thrombosis complicating myocardial insufficiency, Sladen and Winternitz [13] found that while 26 of 65 collected patients dated their heart disease from an attack of acute rheumatism, the time relationship of the venous thrombosis to the rheumatism varied from 6 months to 40 years. Poynton,[14] in describing a case of inferior vena cava thrombosis in a child with acute rheumatism and carditis, states that he has never seen a case of venous thrombosis in rheumatism except in the acute stage, which he considers suggests that there is an active infection of the vein itself. In the second edition of Garrod, Batten, Thursfield, and Paterson's text-book Poynton stated, in 1929,[15] that he had seen in all eight cases of venous thrombosis in acute rheumatism, all associated with severe heart disease. Sindoni,[16] in 1932, described multiple venous thromboses in a patient dying from acute rheumatism and carditis. Histological examination of the veins showed scars in the media and perivascular cellular collections, and Sindoni thought these changes were rheumatic in nature, but was unable to arrive at any definite conclusions.

Since this brief review of the literature shows that apart from Poynton's reports the question of rheumatic phlebitis has received scanty attention since 1900, the following cases seem worthy of record.

THE FIRST CASE

(CLINICAL NOTES BY DR. DAVIS)

The patient, a girl aged 11 years and 9 months, was admitted to the Children's Hospital, Bristol, on April 18th, 1932. She was alleged to have had an attack of rheumatic fever two and a half years previously and another attack commencing in September, 1931. Since the last attack the patient had been resting more or less. About two months before admission to hospital she seemed breathless, and complained of pains in her joints; she became very languid and had several attacks of vomiting. The day before admission she woke up with marked swelling of left arm which was covered with small spots "like flea-bites."

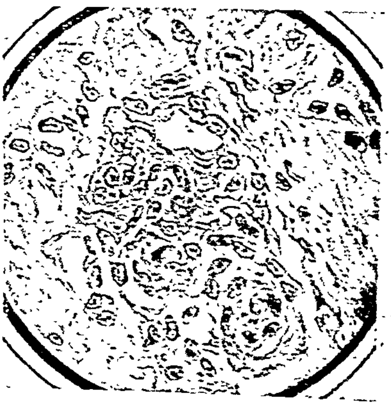

FIG. 2.—High power view of the media of the vein showing one of the collections of cells.

Condition on admission to hospital.—The child was obviously extremely ill and suffering from cardiac distress. Temperature, 99° F.; pulse-rate (right radial), 136; respirations, 30. The heart was much enlarged, especially to the left, the apex-beat being diffuse and more than 1 in. outside mid-clavicular line in fifth interspace. The area of cardiac dullness extended out to the apex-beat. There was a loud systolic bruit with maximum intensity at apex, but heard over the whole of the precordium. The breath sounds were harsh. The left arm and hand were greatly swollen, and exhibited petechial hæmorrhages. The œdema of arm extended to left chest. The left radial pulse was impalpable. The abdomin was a little distended, as were the abdominal veins, and the presence of ascites was diagnosed. There was also œdema of the feet. The urine was free from albumin and remained so throughout. It seemed obvious that only palliative treatment was possible and under the influence of digitalin, sodium salicylate, and sedatives the patient improved a little for a few days, and the volume of urine passed during the 24 hours increased from 8 oz. to 36 oz. on the ninth day. She complained of great pain in the knees, which were swollen; some relief was obtained by dressings containing local analgesics. On the seventh day the swelling of the left chest extended to the neck and left side of face, gradually extending over the whole of face; the eyelids became very œdematous, completely and firmly closing the eyes. Towards the end the swelling of face and eyelids subsided somewhat, but the child became very much weaker and died on May 3rd.

Post-mortem examination.—There was marked œdema of the face, left arm, and chest, and of the legs. The face and left part of the chest showed a fine purpuric rash. There were subcutaneous nodules on both elbows. The tissues of the neck and of the chest wall on the left side were very œdematous. The left subclavian, the left internal jugular, and the left innominate veins were palpable as hard cords and were completely occluded by a firm, pale, adherent thrombus. The right internal jugular was similarly occluded, but the right subclavian and right innominate veins were free except that the thrombus in the right internal jugular pouted into the lumen at the junction of this vein with the subclavian. Both pleuræ contained free fluid, the left more than the right, and the left lung was almost completely collapsed. All the chambers of the heart were greatly enlarged. There was some fibrosis of the mitral valve and its chordæ tendineæ, and there were recent vegetations on the mitral, aortic, and tricuspid valves. There was no pericarditis. There was marked mural endocarditis of the left auricle. The glands about the bifurcation of the trachea were enlarged and fleshy. The peritoneum contained much turbid fluid. There was a nutmeg liver, and the spleen was dark and firm.

Histological examination of the heart showed the presence of numerous Aschoff nodules throughout the myocardium. Sections of the thrombosed veins show hyperæmia of the adventitia which, with the surrounding tissues, is infiltrated with small round cells. The vasa vasorum of the media are dilated, and there are, throughout the media, loose collections of cells which are most noticeable along the course of the nutrient vessels. In general these cells appear to be of connective tissue origin and are spindle-shaped with a large vesicular nucleus. When grouped in the vicinity of a vessel the more centrally placed cells are irregular in shape, and form small "nodules" which closely resemble the Aschoff nodules of the myocardium (Figs. 1 and 2). The thrombus was in most places closely adherent to the intima, which could not be identified at all satisfactorily.

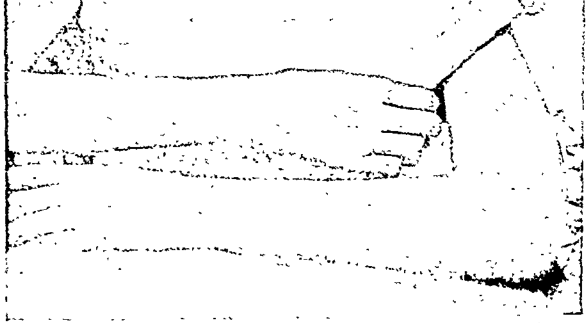

FIG. 3 (Case 3).—Showing the swelling of the left arm and many nodules on the right arm.

THE SECOND CASE

A man, aged 20, sought treatment for swelling and ulceration of both legs. He stated that at the age of 11 he had a severe attack of rheumatic fever, and, while in bed with this, his legs became swollen and on getting up he had noticed enlarged veins over the lower abdomen. Five years ago varicose ulcers developed on both legs.

There was marked dilatation and varicosity of the superficial veins over the lower abdomen which were prominent up to the umbilicus. The superficial veins of both legs and thighs were tortuous and varicose, and there was ulceration of both legs. The apex-beat of the heart was forcible in the mid-clavicular line. There was an apical presystolic thrill. The first sound at the apex was very accentuated and preceded by a presystolic murmur.

For permission to publish this case I am indebted to Mr. C. Ferrier Walters, who performed an omentopexy in an attempt to relieve the venous congestion.

THE THIRD CASE

(CLINICAL NOTES BY DR. BERNARD SCHLESINGER)

On Nov. 28th, 1932, a girl, aged 13, was admitted to hospital on account of pain in the lower left chest and epigastrium, worse on breathing.

History.—She was an in-patient in the Royal Northern Hospital on account of rheumatism with nodules from August, 1929, to March, 1930, and afterwards had a month's convalescence at West Wickham. She continued to make good progress from then and was attending school about a week or ten days before admission when she developed a cold and cough. The parents noticed some slight swelling of the stomach. A few days later pain occurred in the left side of the chest and in the epigastrium.

Condition on admission.—Temperature, 101·6° F.; pulse-rate, 110; respirations, 25. Looked ill and had a persistent cough. Heart: enlarged; loud apical, systolic, and presystolic murmurs heard. Right lung: percussion note dull at base; breath sounds diminished; some râles heard. Left lung: percussion note resonant; breath sounds harsh. Abdomen: tenderness felt in epigastrium; rigidity of upper half of abdomen; no viscus palpable.

Progress of illness.—Dec. 5th, 1932: rigidity now practically disappeared; liver easily palpable extending down to umbilicus and tender. Dec. 7th: complaining of pain and tenderness in the right trapezius (not the point of the shoulder). Jan. 1st, 1933: nodules disappeared. Jan. 27th: nodules have again appeared on elbows, wrists, and knees. Feb. 3rd: numerous nodules (rt. elbow 7, lt. elbow 6, rt. wrist 3, lt. wrist 3, rt. knee 4, lt. knee 2). Feb. 22nd: left arm commenced to swell and reached its maximum in four days (Fig. 3). Feb. 26th: whole of left arm œdematous from hand up to clavicle. Hard mass palpable in the left posterior triangle (? thrombosis of the left jugular vein). Feb. 27th: hæmoptysis (probably pulmonary infarct). Feb. 28th: œdema of the left arm has subsided with remarkable rapidity and the limb has almost resumed its normal size. Nodules still present on both elbows and both knees, and also the radial aspect of both wrists. March 15th: nodules have been present on all the bony prominences in large numbers. March 24th: there has been considerable pain in the neck from time to time; slight swelling of the left arm still present.

Condition gradually becoming worse with active carditis, rheumatic pleurisy and pneumonia, and cardiac failure.

DISCUSSION

Most observers who have studied venous thrombosis in acute rheumatism hesitate to assign the cause to a definite phlebitis of rheumatic nature. As Welch,[8] and Sladen and Winternitz,[13] amongst others, have shown, venous thrombosis is not uncommon as a complication of congestive heart failure from whatever cause, and it is true that in most of the cases in which it has occurred in acute rheumatism there has been an associated severe carditis. However, in view of the almost constant occurrence of cardiac involvement in any severe attack of rheumatism this is hardly surprising. The cases described by Remlinger [4] and Voelcker,[12] in both of which there were no signs of carditis or of heart failure, provide very strong evidence that the rheumatic infection itself may be responsible for venous thrombosis.

If this be accepted it appears that the thrombosis must be due either to some alteration in the blood or some inflammatory change in the wall of the vein itself. The histological findings in Case 1, with the endothelial cell proliferation, are very like those seen in rheumatic lesions in other organs and seem to justify the use of the term "rheumatic phlebitis." There is nothing strange in the possibility of the rheumatic virus directly attacking the wall of the vein in view of the well-recognised widespread character of the manifestations of the disease—arthritis, carditis, chorea, nodules—particularly since the characteristic histological picture of the disease has been described in such situations as the arteries by Pappenheimer and von Glahn,[17] in the lungs by Naish[18] and Fraser,[19] the pharynx by Graff[20] and Fraser,[21] and the diaphragm by Shaw.[22] Shaw also described a cellular infiltration of the adventitia of the superior vena cava with swelling of the nutrient vessels in the case which he reported. The fact, noticed by many observers, that pain often precedes the swelling of the limb may be regarded as further evidence of a primary phlebitis antecedent to the secondary thrombosis.

The rapid subsidence of the swelling which occurred in Case 3 and which has been noted by other observers is interesting. Whether it is due to venous occlusion being incomplete in the first instance as suggested by Remlinger,[4] or whether it is to be attributed to the development of an efficient collateral venous return it is impossible to say. A further possibility is that much of the œdema is caused by the involvement of the lymphatics in the inflammatory process, and that with the subsidence of the acute inflammation the lymphatic drainage once more becomes able to remove the greater part of the œdema. Involvement of the lymphatics may be the reason why in some cases the œdema does not develop until some time after the onset of the pain.

SUMMARY AND CONCLUSION

(1) Three cases of venous thrombosis occurring during the course of acute articular rheumatism in childhood are described and a review of other recorded cases is presented. (2) From the clinical features and histological findings it is concluded that a rheumatic phlebitis may occur as a rare feature of acute rheumatism. (3) The venous thrombosis met with during cases of acute rheumatism is secondary to the rheumatic phlebitis.

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MENINGOCOCCAL VACCINE IN THE TREATMENT OF CEREBRO-SPINAL FEVER

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CEREBRO-SPINAL fever was very prevalent in Lower Egypt during the first quarter of 1932. The number of cases diminished rapidly after the second half of April. Early in the epidemic the course of the disease was very rapid, and it was noticed that most of the cases either died or recovered in a week or at most in a fortnight. The few cases which became chronic were mostly doomed to death. During March the course of the disease began to be prolonged in spite of the intensive treatment with lumbar puncture and antimeningococcal serum; at that time it was thought wise to use meningococcal vaccine.

SOME CASE RECORDS

CASE 1.—A married woman of 30, three months pregnant, was isolated on March 6th, 1932, with a temperature of 100° F. and a pulse-rate of 105; she complained of headache. In the afternoon the temperature shot up to 103·1° F., and the patient became delirious and vomited repeatedly. Lumbar puncture was performed and the cerebro-spinal fluid was turbid and under high tension. On bacteriological examination meningococci were found.

Lumbar puncture was repeated from March 6th to 11th, and 20–40 c.cm. of antimeningococcal serum were given intrathecally, but the symptoms did not show any abatement. Serum therapy was stopped as it had not seemed to be any use, but lumbar puncture was repeated daily until March 21st. On March 22nd the patient was very emaciated and her condition very bad. She objected utterly to further lumbar puncture, and therefore 20 millions of meningococcal vaccine were injected hypodermically. On March 24th 50 millions of vaccine were injected, after which the patient markedly improved and the temperature became normal on the 26th. On the 27th 100 millions were injected and a mild reaction occurred. In the afternoon the temperature became 100·7° F., and the patient complained of headache. This reaction lasted about 12 hours, and then the temperature became normal. On March 30th 20 millions were injected.

Thereafter the vaccine was continued every third day, doubling the dose each time. The patient showed rapid and progressive improvement, except for a mild recrudescence which lasted two days. She was discharged as cured on April 18th, and she was seen on May 31st enjoying good health and her pregnancy was continuing.

CASE 2.—The mayor of a small village, aged 50, was isolated on Feb. 28th, 1932, with fever of 100·4° F. and pulse-rate of 110. He complained of headache, vomiting, and rigidity of the neck. Kernig's sign was positive and the cerebro-spinal fluid was very turbid and under tension. On bacteriological examination meningococci were present.

Ordinary treatment with lumbar puncture and serum was carried out, but the patient's condition was changing from bad to worse and the fever was running an irregular course. On March 26th treatment with vaccine was commenced; the first dose was 20 millions. Vaccine injections were repeated every third day, doubling the dose each time. After the second injection there was marked improvement in the general symptoms, and the fever abated. The patient was discharged on April 18th as cured. He is now enjoying good health.

These two cases were the first to be treated with meningococcal vaccine in my series. Owing to the promising results I used it in the treatment of acute cases which did not improve within two or three days on ordinary treatment. The vaccine was also used in cases complicated with inflammatory conditions such as arthritis and pleurisy.

CASE 3.—A girl of 12 was admitted to Zagazig Fever Hospital on May 3rd, almost comatose; the cerebrospinal fluid was under high tension and very turbid. On bacteriological examination meningococci were present in the fluid.

On May 3rd 40 c.cm. of serum were injected intrathecally, and on the next day 30 c.cm. were given, and this dose was repeated for four days. On May 5th the patient's condition was serious and no improvement in the general symptoms was seen. Therefore vaccine therapy was commenced with 5 millions, repeating the injections every third day and simultaneously doubling the dose. The patient rapidly improved, in spite of stopping serum therapy, after May 6th.

CASE 4.—A farmer of 19 was isolated on April 9th, 1932, with fever of 100·4° F. and pulse-rate of 110. He complained of headache, vomiting, and rigidity of neck; Kernig's sign was positive and the cerebro-spinal fluid was very turbid, under high tension, and contained meningococci.

Ordinary treatment by lumbar puncture and intrathecal injection of serum was carried out from April 9th–20th, but the patient's condition was rapidly getting worse. On April 12th he developed double synovitis of both knee-joints. On April 16th aspiration was performed and ℥ss. of purulent fluid was aspirated from each joint and 10 c.cm. of serum injected locally. However, no improvement occurred either in the general condition or in the knee-joint.

On April 20th 20 millions of vaccine were injected, and thereafter a course of vaccine was given. The patient rapidly improved, in spite of the cessation of serum injections and lumbar puncture. Locally lead subacetate fomentations were applied four-hourly to the knee-joints, which rapidly improved without any further aspiration. The patient was discharged completely cured on May 18th.

METHOD AND DOSAGE OF MENINGOCOCCAL VACCINE

The vaccine is injected hypodermically in the outer side of the arm in the following doses:—

1. *For adults.*—In acute cases the first injection is 5 millions, in subacute cases 10 millions, and in chronic cases 20 millions. The injections are to be repeated every third day, simultaneously doubling the dose. When the amount reaches 600 millions it is much better to repeat this amount every five to seven days until recovery than to increase the dose any more. The course usually consists of six to twelve injections.

2. *For children.*—The dosage given is as follows:—

Up to 6 years	¼ the adult dose.
From 6 to 12 years	½ „ „ „
„ 12 to 16 „ ..	¾ „ „ „

In my opinion sex has no effect on the dosage. The doses are not, of course, absolute, and the ordinary rules of vaccine therapy should be followed. The meningococcic vaccine is prepared so that each cubic centimetre contains 1000 million microbes; and therefore to get small doses it should be diluted with sterile water 1 : 50.

In subacute and chronic cases vaccine therapy may be used alone combined with simple lumbar puncture, which should be repeated according to symptoms, tension, and turbidity of the cerebrospinal fluid. In such cases antimeningococcal serum, in my experience, is of little value because, had it been of any effect, the patient would have recovered in 7–15 days.

ANALYSIS OF CASES TREATED WITH VACCINE

Between March 22nd and June 2nd, 1932, 30 cases were treated with antimeningococcal vaccine. The period in which the treatment was begun varies.

1. In 15 cases the vaccine was used during the first week of isolation; these may be considered as acute cases. The vaccine was only used in acute cases which had not responded to ordinary treatment within the first two or three days.

2. In 8 cases the vaccine was used during the second week of isolation; these may be considered as subacute cases.

3. In 7 cases the vaccine was used after the second week of isolation; these may be considered as chronic cases.

The result of the treatment was as follows:—

Acute cases.	Deaths.	Subacute cases.	Deaths.	Chronic cases.	Deaths.
15 ..	5	8 ..	0	7 ..	0

The percentage of deaths in acute cases is 33·3, while the total proportion of deaths is 16·7 per cent. The cases of cerebro-spinal fever which were admitted from January to May, 1932, and the result of their treatment is shown in the following Table.

Month.	Cases.	Deaths.	Remarks.
January ..	36	21 (58·3 %)	None of the cases was treated with vaccine.
February ..	74	34 (45·9 %)	
March ..	82	49 (59·8 %)	8 cases were treated with vaccine; all recovered.
April ..	36	20 (55·6 %)	13 cases were treated with vaccine; 3 died.
May ..	15	7 (46·67 %)	6 cases were treated with vaccine; 1 died.
Total ..	243	131 (53·9 %)	

These figures are taken from the records of Zagazig Fever Hospital, Lower Egypt.

The value of meningococcal vaccine in the treatment of meningitis is very evident, especially if we take into consideration the fact that the vaccine was only used in complicated cases or in cases which did not respond to ordinary treatment.

CONCLUSIONS

Lewkowicz,[1] in an article on the pathogenesis of cerebro-spinal fever, mentioned the use of meningococcal vaccine in the treatment of this disease, but said that the antibodies did not appear in sufficient quantity in the ventricular fluid. However, cerebrospinal fever is a septicæmic disease in some stage or other and vaccine therapy should be of value. Egerton[2] mentioned the use of vaccine in the treatment of the acute stage, but in my experience it is more indicated in the subacute and chronic cases. From the observation of more than 200 cases of this disease, I consider that meningococcal vaccine should have its place in the treatment of cerebrospinal fever. It is indicated in (1) subacute and chronic cases; (2) inflammatory complications—e.g., arthritis and pleurisy; (3) cases which are not affected by ordinary treatment. It is relatively indicated in (1) acute cases which become worse in spite of ordinary treatment, although the disease in most of these cases is fatal; (2) nervous and eye complications. In fulminating and hyperacute cases the vaccine has no effect in the first stage of the illness, and the best method of treating these cases is repetition of lumbar puncture and administration of serum intrathecally and intravenously with glucose solution in the following proportions:—

Antimeningococcal serum	40 c.cm.
Glucose solution	250 c.cm.

To be repeated every 12 or 24 hours.

Simultaneously adrenaline should be injected subcutaneously to guard against any anaphylactic tendency.

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TWO CASES OF TYPHOID FEVER
WITH APPARENTLY IDENTICAL ORIGIN BUT DIFFERENT SEROLOGY

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The cases here recorded are of considerable interest from both clinical and bacteriological aspects, and demonstrate the importance of the application of the newer knowledge relating to the agglutination tests in the routine diagnosis of sporadic and epidemic cases of enterica.

THE FIRST CASE

A. B., a girl aged 7, was admitted to the Birkenhead infectious diseases hospital on August 18th, 1932, and was then diagnosed on clinical grounds as a case of enteric fever. There was a typical history of onset, the child being admitted on the seventh day of illness, and presenting then all the classical features of enteric fever. The child had partaken of cockles, imperfectly cooked, on one occasion about a fortnight before the onset of illness. On admission the white blood count was 2500 per c.mm., and the patient was gravely ill. The further history of the case was as follows:—

Second week of illness (first week in hospital).—Still very ill; temperature remained high with little daily variation; diarrhœa continued; rash still appearing in crops; diazo-reaction positive; widespread bronchitis.

Third week.—Temperature remained high; marked myocarditis, with blood pressure falling steadily; breathing very laboured, with intense congestion of lower half of right lung.

Fourth week.—Temperature remained high: general condition very poor; marked subsultus tendinum and carphology; continuously delirious, and doubly incontinent.

Fifth week.—Temperature falling; slight improvement in general condition; lungs clearing, but myocarditis still very marked; extraordinarily profuse crop of furuncles, with superficial and deep abscesses, and gangrenous bedsores on trunk and limbs (*Staphylococcus aureus* isolated in pure culture); white blood count rose to 8000 per c.mm.

Sixth week.—Temperature oscillating wildly: general condition very poor; skin sepsis continued; white blood count rose to 12,500 per c.mm. (of which polymorphonuclears formed only 55 per cent.).

Seventh week.—Temperature falling: general condition improved; sepsis less marked; mentally clearer: white blood count rose to 16,000 per c.mm.

Eighth week.—Temperature settling; sepsis clearing.

From the eighth week onwards the child made an uneventful recovery, being discharged from hospital in good condition on Nov. 30th, 1932. (J. M. D.)

BACTERIOLOGICAL FINDINGS

On admission the blood culture gave a growth of *Bacterium typhosum*, but the fæces and urine were negative. (J. M. R.) This strain was motile and showed granular agglutination with the patient's own serum and the Standards Laboratory's "O" typhoid serum (titre 1 in 250) at dilutions of 1 in 20. It showed "H" or large floccule agglutination with the serum of Case 2 at a dilution of 1 in 160, and with the Standards Laboratory's "H" typhoid serum (titre 1 in 250) at a dilution of 1 in 320. (J. D. A. G.)

The Widal reaction, using the Standards Laboratory's suspensions of *Bact. typhosum* "H," *Bact. paratyphosum* A and *Bact. paratyphosum* B, was negative at dilutions of 1 in 20 and over, and remained negative when repeated weekly with these suspensions for the next 12 weeks. No tests with "O" suspensions were done up to this point. *Bact. typhosum* was isolated from the urine on the twelfth week of the disease. (J. M. R.)

The serum obtained at the twelfth week (Nov. 3rd) agglutinated *Bact. typhosum* "O" (Standards Laboratory) suspension at a titre of 1 in 40, and at the fourteenth week (Nov. 17th) gave granular agglutination at the following titres. (J. D. A. G. and confirmed by J. M. R.)

Bact. typhosum—

"H" (Standards Laboratory)	positive in	1 in 10
Weil and Felix H.901	,, ,,	1 in 10
"O" (Standards Laboratory)	,, ,,	1 in 40
Felix and Olitzki O.901	,, ,,	1 in 40
Isolated from the blood of this case by J. M. R.	,, ,,	1 in 20

The reduction factor for the Standards Laboratory's "O" suspension used in each case was 8, so that the reduced titre for the "O" suspension was 5.

THE SECOND CASE

B. B., aged 34, the aunt of A. B., was admitted a few days after A. B. with a history of having partaken of cockles on one occasion in company with her. At the time of admission she had been vaguely ill for 12 days, and on admission showed, though to a less marked extent than A. B., the typical features of enteric fever. The white blood count was 3600 per c.mm. (polymorphonuclears 48 per cent.). In this case the illness ran a milder, although fairly severe course. The temperature subsided by the end of the fourth week, but later there were a few minor complications, a mild periostitis developing in one rib and both tibiæ. All three cleared up spontaneously on conservative treatment. Convalescence was slow, but the patient ultimately made a good recovery, and was discharged from hospital on Nov. 16th, 1932. (J. M. D.)

BACTERIOLOGICAL FINDINGS

On admission the blood culture was sterile, but the Widal reaction with the Standards Laboratory's suspension of *Bact. typhosum* "H" was positive at 1 in 200. No test with an "O" suspension was made. (J. M. R.)

The serum obtained at the fourteenth week (Nov. 17th) gave the following titres. (J. D. A. G. and confirmed by J. M. R.)

Bact. typhosum—

"H" (Standards Laboratory)	positive at	1 in 320	(floccules).
Weil and Felix H.901	,, ,,	1 in 320	,,
"O" (Standards Laboratory)	,, ,,	1 in 80	(granules).
Felix and Olitzki O.901	,, ,,	1 in 80	,,
Isolated (by J. M. R.) from blood of Case 1	,, ,,	1 in 80	(floccules).

The reduction factors for the Standards Laboratory's "H" and "O" suspensions were 11 and 8 respectively, giving reduced titres of approximately 30 and 7 for the "H" and "O" suspensions. The fæces and urine consistently gave negative results even on repeated examinations. (J. M. R. and J. D. A. G.)

DISCUSSION

In the first case it must be admitted that the reduced titre of 5 for the "O" suspension was not in itself diagnostic, a reduced titre of 10 being required for certainty. It was, however, in this case strong confirmation of the diagnosis made on clinical grounds. Apart from the confirmatory value of this sub-diagnostic titre, especial interest attaches to the fact that the cases, while differing so widely in their serology, were infected from apparently one and the same source—namely, the partaking of cockles about the beginning of August, 1932. In the second case, the "H" reduced titre of 30 was definitely diagnostic, and the "O" reduced titre of 7, though on the borderline, was practically diagnostic.

The isolation of a motile *Bact. typhosum* from the first patient, who showed "O" agglutination alone at dilutions of over 1 in 10, is worthy of note. It appears probable that the organism changed from a non-motile to a motile form very soon after its removal from the body. On the other hand, it may be that not all the organisms in the patient in such a case are in the "O" form—i.e., flagella may have already developed without having had time to give rise to any considerable quantity of "H" agglutinins. This latter explanation seems unlikely in view of the repeated failure of the serum of the first patient to agglutinate "H" suspensions.

Thanks are due to Prof. J. M. Beattie and to Dr. A. D. Gardner for helpful criticism, and to Dr. D. Morley Mathieson, medical officer of health for Birkenhead, for permission to publish the cases.

A CASE OF UNDESCENDED OVARY

By R. Milnes Walker, M.S. Lond., F.R.C.S. Eng.

HON. SURGEON TO THE ROYAL HOSPITAL, WOLVERHAMPTON

There are very few cases on record in which failure of descent of the ovary into the pelvis has led to clinical symptoms; in fact, I have found only two such cases, and in one of these it is doubtful if the anatomical position of the ovary was responsible for or influenced the clinical aspect. It seems, therefore, that a further case is worth recording.

The descent of the ovary may be arrested in any part of its course between the region of the kidney and its normal position in the true pelvis; when it is found high up in the region of the kidney there are to be found other abnormalities of development, such as spina bifida,[1 2] or defects in the development of the colon.[3 4] Abnormalities in other parts of the female genital tract have also been described in connexion with this condition.[5]

The cases in which the abnormality has been connected with definite symptoms are as follows:—

Case 1.[4]—Aged 15; menstruation had started three months previously and had so far been regular. She had had pain in the right side for about three months, and this had been more severe at the periods. At an operation the ovaries were found to be in the iliac fossæ, the Fallopian tubes were long and reached the ovaries, while these latter organs were apparently normal, except that they were rather long (the length of the right one is given as being about two and a half inches). The uterus was abnormally small, and the colon was not fully developed, for the cæcum was found to lie where the middle of the transverse colon should be.

Case 2.[6]—Aged 37; menstruation normal, two children, ten and nine years ago. Symptoms of seven years' duration consisted of attacks of pain and fever, followed by a flow of pus from the vagina, which gave her relief; the attacks had become more frequent, and finally almost continuous. She had a mass in the right iliac fossa, which at operation was found to consist of a pyosalpinx and ovary. The left ovary was in its normal position in the pelvis. It seems that the symptoms in this case were entirely due to the infection of the Fallopian tube, and the failure of descent of the ovary into the pelvis was merely incidental.

Case 3.—In the case now described for the first time the patient was a girl of 14. She had never menstruated, and had been in good health till the onset of the present attack. She complained of fairly severe abdominal pain of 48 hours' duration, which had been localised to the right iliac fossa from the outset. She vomited once soon after the onset of the pain.

Her temperature was 99° F. and her pulse-rate 98. There was a small firm lump to be felt in the right iliac fossa, about one inch in diameter, and relatively fixed to the posterior wall of the iliac fossa; it was tender, but there was no rigidity of the abdominal wall over it. An operation was performed under ether anæsthesia; a muscle-splitting incision was made over the swelling, which was thought to be an appendix abscess. When the peritoneum was opened, the cæcum and appendix were found to be normal; the mass was retroperitoneal, behind the cæcum, and when the peritoneum along the outer border of the cæcum had been incised the mass was found to consist, in its upper part, of blood clot, while the lower part was solid. When the blood clot was removed there was an oval tumour, two inches long and about three-quarters of an inch in width, with its long axis lying vertically; to its lower pole was attached a fibrous band, which ran downwards over the pelvic brim, while blood-vessels entered it at its inner border near the upper pole.

The right Fallopian tube was lying in its normal position in the pelvis, and the uterus felt to be normal in size for a girl of her age. The left ovary and tube could not be palpated through the incision. The swelling was removed, and suspicions that it was an undescended ovary were later confirmed on microscopical examination. The wound was closed after the appendix had also been removed, and the patient made a good recovery.

The microscopical examination of the tumour showed the appearance of a well-developed ovary, which was normal for a girl of this age; the section passed through two Graafian follicles and showed also a large number of primitive ova.

Four months after the operation the patient developed pain in the left iliac fossa, which she described as being similar to that which she had felt on the right side before the operation. This pain lasted for about three months, was never very severe, and had no monthly periodicity. Apart from this, the patient has now remained in good health for the two years since the operation. She has not yet menstruated, though she is now 16 years of age, but she has a normal growth of pubic hair, and her other secondary sexual characteristics are normally developed.

There is no doubt that it was the malposition of the organ which in this case was largely responsible for the symptoms; the fact that the organ was entirely retroperitoneal meant that there was no means of escape for any hæmorrhage associated with the rupture of a Graafian follicle, so that when this occurrence had taken place the blood had clotted round the organ, and had caused the palpable mass in the right iliac fossa.

It is surprising that more cases in which this malformation has given rise to symptoms have not been recorded. The reason probably is that in the majority of cases in which the ovary does not reach the pelvis the organ is rudimentary and never produces Graafian follicles; it is only when the ovary is in such a position that ova, if formed and released by the rupture of a Graafian follicle, cannot escape freely into the peritoneal cavity, with any hæmorrhage that may take place at the same time, that the condition gives rise to symptoms.

I wish to thank Dr. S. C. Dyke, pathologist to the Royal Hospital, Wolverhampton, for his microscopical examination and report on the ovary removed; also Dr. W. Goldie, who sent the patient to hospital and has been most helpful in following the case since the operation.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

AT a meeting of this section, held on Oct. 23rd, the chair was taken by Sir FARQUHAR BUZZARD, the president.

Dr. W. STOBIE opened a discussion on the

Early Diagnosis of Pulmonary Tuberculosis

The early diagnosis in adults, he said, was hampered by lack of a satisfactory conception of the pathogenesis. Even now there was sharp division of opinion as to the portal of entry and the route taken by the organisms to the lung. He summarised the reasons for failure to detect early cases as: lack of accepted facts; inadequate experience of medical students, largely due to dissociation of tuberculosis work from that of the general hospital; possibly some change in the type of disease; economic difficulties of the patient, so that advice was sought late; and the lack of institutional accommodation. No one symptom was pathognomonic; any of the classical symptoms might be found in other disorders. Less often stressed among symptoms were aphonia, tachycardia with fever, pain in the shoulder, and anorexia. Aphonia was too often dismissed as hysterical in young women. Anorexia was a frequent early symptom. On the other hand, a premenstrual rise of temperature was not diagnostic, nor did absence of fever during the monthly period rule out the disease. The urge of patients to minimise their symptoms must not be forgotten. Hyperthyroidism was perhaps the best example of a systemic disease resembling tuberculosis. No one sign was diagnostic except the discovery of the bacillus in the sputum. The slightest degree of spinal curvature and occupational factors would modify the expansion of one side of the chest, but an important sign was local "lagging" of muscle resistance. Percussion should be light; the affected side might yield a slightly tympanitic note. A feeling of resistance, sometimes associated with tenderness, was a valuable sign. Bands of resonance were of doubtful usefulness in diagnosis. Neither percussion nor auscultation would help with deep-seated lesions, but long deep breaths, followed by cough, should be listened to. The first sign in auscultation was weakening of the breath sounds, but this must not be regarded as pathological unless associated with another sign, such as persistent crepitation, best heard below the clavicle in the second interspace and just internal to the angle of the scapula. The axillæ must also be investigated.

It was possible that the tubercle bacillus might lose its acid-fast properties at certain stages. The blood picture of tuberculosis showed nothing pathognomonic. The focal reaction after the injection of tuberculin was useful, and its dangers had been exaggerated. Recent work suggested that a precipitin test might prove valuable in diagnosis.

X rays should be regarded as part and parcel of the clinical examination once suspicion had arisen, and both clinician and radiologist should be present at the screening. A control series was essential, or many lusty undergraduates would be in danger of prolonged sanatorium treatment on X ray pictures of the chest. The screen gave useful information, but diagnosis should await the film. It was doubtful whether diagnosis could be made earlier by radiography than by other methods. How far persons showing small densities at the apices were ill and in need of treatment was doubtful. Nevertheless, no diagnosis of tuberculosis should be made without the aid of X rays. All methods of proved value, traditional and modern, should be used.

Dr. PETER KERLEY said that the function of the radiologist was not to make a final diagnosis but to correlate accurately his findings with those of the clinician. The commonest early radiological appearance was a round opacity in the infra-clavicular region, sharply- or ill-defined, about the size of a shilling, and equal in density to the shadow of the inferior vena cava. The sign was more common on the right side than on the left, and sometimes the foci were multiple. Only when a central translucent area appeared did the sputum become positive. Healing by calcification was rare. Differentiation of a single focus from lung abscess and of multiple foci from metastases might be impossible. The second most common lesion was a triangular opacity, the apex pointing to the hilum. Calcification again was rare. Thirdly, there might be a collection of small spots, usually arranged deeply in the centre of an upper lobe, and in a ring shape which differentiated them from vascular shadows. Fourthly, there might be a collection of from four to ten spots in the apex; this sign was very definite but not common. The lesions tended to heal, and the usual symptoms were malaise and cough; caseation was uncommon.

The problem of correlation was more difficult in children, because glandular tuberculosis was always present as well, and often the only symptom was malaise. The primary lung lesion was usually surrounded by a non-specific lobar infiltration, through which a round dense opacity might occasionally be seen. The round opacity alone was rare in children and, when seen, was usually in the right lower lobe. Glandular tuberculosis always produced some pulmonary reaction in the neighbourhood, seen as an ill-defined opacity radiating from the hilum, never associated with complete lobar infiltration. In hilitis there was inflammation of the glands and hilar connective tissue without much enlargement; the condition was more often non-tuberculous than tuberculous. An intradermal tuberculin test gave a sharp focal reaction in the lungs, and the opacity cleared up in a few days; this distinguished the tuberculous type.

Dr. J. A. STRUTHERS said that the problems arising in a dispensary did not differ from those met elsewhere. The medical profession could not be blamed for failing to diagnose a disease in patients who did not consult them. The problems of tuberculosis were as much economic and social as they were medical. The family history was important. Some cases of chronic bronchitis and emphysema suddenly began to show tubercle bacilli in the sputum; gastric ulcer and tuberculosis also seemed to coexist with greater frequency than would be expected, nor were pulmonary tuberculosis and mitral stenosis incompatible. Radiological and clinical findings must be correlated. Every effort should be made to keep the tuberculosis clinic in close touch with general medicine. Diagnosis should not be precipitated or hurried; if a case could not be settled in six weeks, little harm would be done by delay. On the whole, cases were seen at the dispensary earlier than at the general hospital. Suspicion should be aroused by any contact who was febrile without obvious cause. The onset was apt to be relatively sudden. When diagnosis was in doubt and hospital accommodation was required, the patient should be kept apart from others, as serious mental damage might be done by association with advanced cases.

Dr. R. R. TRAIL remarked that the history of phthisis was the history of symptoms; moderately advanced cases might have a history of weeks only. Important symptoms were indigestion and cough lasting more than a month. Veins in the throat were still too often blamed for hæmoptysis, and the warning of pleurisy disregarded. A patient should be advised to take a short educational stay in a sanatorium after either of these conditions. Fistula in ano was strong presumptive evidence of phthisis, and amenorrhœa was often a sign. Ether anæsthesia often woke up a lung lesion, whereas gas had no ill-effects. Rest was the great diagnostic criterion. The patient was put to bed for three-hourly temperature readings; if there was no fever an exercise test should be made. After twenty minutes' walk the temperature would rise, but the fall would be slow in the tuberculous, and if a reading of 99° were found after half an hour the radiologist should be called in. Many non-tuberculous patients had been labelled tuberculous by radiology. Physical signs and symptoms were of much less importance in early diagnosis than exercise and rest. Lack of movement was the most valuable sign; eyes and hands were more useful than ears in diagnosis.

DISCUSSION

Dr. CECIL BULL observed that the clinical symptoms and the radiological signs seemed to be of the greatest value in diagnosis. He had found radiological signs in a different order from Dr. Kerley: scattered lesions were more common than circular or triangular ones. Pathological evidence should be correlated with clinical and radiological.

Dr. LEONARD FINDLAY said that tuberculosis was not the same everywhere and at all ages; therefore the same generalisations could not be applied to all cases. In the child the disease was practically never chronic. Clinical signs exceeded radiological in pneumonia, but the reverse was almost always the case in tuberculosis. It was not fair to make the diagnosis on a single film; the case should be watched radiologically over a period. Pulmonary tuberculosis in children was acute and usually soon fatal; one type showed a very diffuse caseating broncho-pneumonia—limited to infants—the other type was part of a generalised tuberculosis in older children. If the adult standards of diagnosis were applied to the child many non-tuberculous children would be labelled phthisical.

Dr. W. E. LLOYD showed a series of slides illustrating the importance of radiology in all cases of hæmoptysis. The drainage from the focus could usually be seen clearly. Clinical examination had been very indefinite in his series and radiology had been essential for the diagnosis.

Dr. R. COOTE spoke of 103 cases he had investigated, 5 being early and 84 advanced or moderately advanced. The histories showed that all the familiar symptoms had been present. The disease itself had made difficulties in diagnosis, and medical men had shown a lack of appreciation of the significance of symptoms. There was a snare in the stethoscope; what the ear didn't hear the heart didn't grieve at. Students ought to be taught to regard the stethoscope as an explosive weapon. The time had come for a commission on clinical signs, a clearing-out of the old junk, and retention only of those which were based on clinical pathology.

Dr. L. S. T. BURRELL said that every patient who came up for diagnosis had something wrong with him and ought to be made well. The gap between the negative and positive cases would be eliminated, and many later cases saved if every patient was treated. There was a danger in stressing too much the importance of early diagnosis. Contacts were of great importance at any age. If all adult tuberculosis was the development of a disease contracted in childhood, it was hard to see why the adult should be susceptible to his own tubercle bacilli and immune to those of others with whom he came into contact.

Dr. STOBIE, in reply, said the tuberculosis officer should be a member of the honorary staff of a hospital. He agreed with Dr. Findlay about the difference between children and adults, but had known of several children who had recovered. It was far better to put doubtful patients under a strict régime than to let them go untreated.

SECTION OF NEUROLOGY

AT the opening meeting of this section on Oct. 19th Dr. S. A. KINNIER WILSON gave his presidential address on

Megalencephaly

There appears, he said, to be no pronounced exception to the general rule that any somatic tissue or organ may depart from its normal standard in the direction of either under- or overgrowth. The brain, as one of the organs of the human frame, is likewise susceptible to hypo- or hyperplasia. This is an old observation in medicine, for fairly evident reasons; a small head or a big head undoubtedly engages attention if its deviation from the norm is well marked. Current nomenclature in this connexion is rather unsatisfactory; microcephaly is used where micrencephaly is clearly preferable, and should a term be wanted for the former, considered as a smallness of skull, then microcrania should be employed. As regards the converse anomaly, however, the correspondence is not quite the same. From a large head a large brain cannot immediately be inferred, seeing that the principal cause of cranial enlargement is hydrocephalus, and the hydrocephalic brain is distended but in no sense hypertrophied.

On theoretical grounds "big-brainedness" is a possible genetic anomaly, but the possessor of an unusually big and heavy brain whose functions are normal cannot be considered pathological; he might be remarkable for outstanding intellectual ability (though this is by no means always the case). Increase of bulk accompanied by superlative physiological activity is a departure from the norm, yet not a morbid state. Scattered sparsely through the literature, however, will be found records of cerebral hyperplasia accompanied by some degree of mental retardation or of idiocy, by epilepsy, or by other abnormalities of function. The brain as a whole has undergone harmonious and well-proportioned enlargement in its general naked-eye dimensions; it fills the cranium "to capacity," its surface is covered with plump convolutions, and its weight considerably exceeds the average for age and sex concerned. The brain *looks* normal, but yet is the seat of some dynamic defect. For such an anomaly of growth the term "megalencephaly" was originally suggested by Morley Fletcher in 1900. Long before then, and occasionally since, brain "hypertrophy" or "hyperplasia" has sometimes been employed to denote the same condition, but neither perhaps quite conveys the idea of *pathological* overgrowth implicit in the word megalencephaly.

Two cases, said Dr. Wilson, belonging to the class have come under observation. One was that of a little boy of 2½ years, who had always been backward and whose head from his earliest months had been considered unduly large. He died from a sudden series of epileptic fits, and at autopsy the maximum circumference of the skull was found to be 55 cm. (normal, 47 cm.). The brain weighed no less than 1644 g. (average, 1010 g.). The gyri were full, plump, and rounded, the cortex possibly slightly thicker than normal. No disproportion between grey and white matter could be discovered. Histological examination showed that large numbers of the pyramidal cells of the third and fifth cortical layers were curiously elongated, stained deeply, and were devoid of normal Nissl substance. Their cytoplasm refused to differentiate by ordinary staining technique. In addition, the nuclei were also oval or elongated, sometimes almost triangular, stained deeply, and no nuclear structure could be made out.

The second case was that of a little boy of 3 years, who also had been backward from birth, but who had not suffered from convulsions. Like the first, his case had been confidently diagnosed during life as one of internal hydrocephalus. Nevertheless, at autopsy, the brain was found to be harmoniously hypertrophied, with no sign of hydrocephalus; it weighed 1502 g. (normal, 1080 g.). The circumference of the head was 51·2 cm. (normal, 47 cm.). The pathological examination of the cerebral tissues in this second case has not yet been completed.

In both cases the condition appeared to be one of pure megalencephaly, in the sense of increase of total quantity of neural substance, made up of increase in individual elements, grossly out of proportion to the age of the infant, but coupled with evident anomalies of individual cell-constitution. No areas of gliosis were found in either; the hyperplasia involved both parenchyma and interstitial substance equally.

The ætiology and pathogenesis of megalencephaly are, Dr. Wilson continued, very obscure, but consideration of certain data in connexion with abnormal somatic growth may throw some light on them. It is well recognised that in the case of acromegaly virtually all the tissues and organs of the body are liable to overgrow; splanchomegaly, for instance, is far from rare. But as a general rule the brain itself does not share in the hypertrophy, and this is a fact of much significance. Again, when the body suffers from wasting diseases, e.g., the famine or hunger œdema of the war period, although all the viscera undergo marked reduction in size and weight this does not apply to the brain to anything like a proportional extent. These and certain other considerations seem to indicate that in some way or other the brain (and central nervous system generally) is independent of the hypertrophying hormones of acromegalic dyspituitarism, on the one hand, and of the injurious effects of cachexia on the other. The brain might thus be conjectured to have some means of protection of its own. Interesting evidence recently adduced by Prof. G. H. Parker of Harvard favours the theory that nervous tissue has secretory as well as conducting properties, and that the problem of trophicity is closely bound up with this secretory function. Thus it might be imagined that the brain has within itself its own hormone-producing system, and that this system is responsible for the development and maintenance of trophicity. In a sense, accordingly, the brain might be regarded as a gland.

Were such a hypothesis to prove worthy of credence, its application to the question of megalencephaly might not be too far-fetched a conception. It would serve to explain with some plausibility the phenomena of that genetic abnormality, and at the same time might be invoked to account for the independence of the brain in the presence of circulating hormones which do unquestionably exercise a hypertrophying influence on other tissues and organs. In the case of acromegaly, the body overgrows but not the brain; in the case of megalencephaly, the brain overgrows but not the body.

PADDINGTON MEDICAL SOCIETY

Dr. W. G. Bendle, the president, took the chair at a meeting of this society held at the Great Western Royal Hotel on Oct. 10th, when Dr. G. H. Oriel opened a discussion on

Asthma

It was necessary, he said, to consider the constitutional factor and the precipitating stimuli. Given an asthmatic tendency the stimulus might be of almost any form, physical or psychological. There was evidence of an allergic causation—hypersensitiveness to any foreign protein—some 50 per cent. of asthmatics giving positive results to skin tests, especially extracts of house-dust and feathers. An hereditary tendency was frequently observed. It was difficult to establish whether the changes in the allergic state were primary or secondary. Dr. Izod Bennett had shown that if a healthy subject were hypnotised and fear were suggested, the hydrochloric acid content of the gastric juice would be lowered, and it had been stated that the majority of asthmatic children had hypochlorhydria. On the other hand, asthmatic children were often what their mothers called "sensitive," and asthmatic adults often had normal gastric acidity. Most allergic subjects, especially children, showed a tendency to low blood-sugar, and during the attack the amino-acid content was usually higher than normal. The urine showed an increase in ammonia-combined acid, diminution in the chlorate excretion, a marked tendency to a deposit of urates, and an increase in the output of creatinine. This picture could not be entirely explained by the effect on the body of mental conflict, but could justly be considered secondary to an underlying condition.

A non-heat coagulable substance could be isolated from the urine during an attack, and would give positive skin tests on allergic but not on normal subjects. The excretion of this proteose, a protein breakdown product, was possibly also secondary. Prof. Langdon Brown had suggested that it might be due to a deficiency in histaminase, but present-day methods could not test this theory. Normal serum, however, had been found to possess the power of breaking down peptones and proteose into simpler substances, such as the amino-acids, and research was being conducted into the question of whether asthmatic serum had the same power. Dr. Oriel said that his impression so far was that it had not, and this deficiency would account for the appearance of proteose in the urine. Treatment was by elimination of foreign proteins, specific or unspecific desensitisation, the administration of hydrochloric acid and glucose, and psychotherapy.

Prof. Millais Culpin pointed out that his generation of medical students had been brought up to a materialistic outlook. Nowadays far less insistence was, he said, laid on physical treatment of physical disorders. Asthma was one of many conditions which might have a mental foundation. The Adlerians held that these patients reacted in this particular way because of an organ inferiority. Without fully accepting this view, he testified to a considerable temperamental difference between the asthmatic and the rheumatic child: in a roomful of rheumatics if one cried all would; in a roomful of asthmatics if one cried the others would merely want to know what was the matter with him. The jovial fat extravert did not often suffer from asthma. The physical symptoms could be replaced by an anxiety or obsessional state, though the conditions might be combined. Asthma was often an expression of a phobia, and was sometimes permanently cured when the patient was helped to analyse out a satisfactory reason. The innumerable material stimuli that could produce an attack made asthma look like a kind of biochemical Puck. It might be the great task of medicine to link up the emotional and the biochemical points of view; on the other hand, it might be wrong to draw a distinction between mind and body at all. An attempt towards this harmony was Dr. Culpin's theory that an original emotional stimulus evoked a reflex response by which a number of physiological reactions became abnormally labile. Some of the other chemical reactions of the body might also be rendered labile, and if they took place at the time of the emotional stimulus a reflex might be conditioned and the chemical stimulus could work thereafter in the absence of the emotional stimulus. The latter was the primary cause of the trouble and the conditioning of the reflex might be more or less accidental. The biochemical Puck was therefore identified, not as a mysterious and mischievous being, but as the human mind itself. Feather-sensitiveness might in some cases be due to the juvenile association of the smell of feathers with the witnessing of sexual intercourse between the parents.

Dr. J. FREEMAN welcomed the distinction between the rheumatic and the asthmatic child, for it disposed of the foolish theory that rheumatism was an allergic manifestation. Skin reactions varied according to the disposition of the patient at the time. His impression was that asthmatic attacks were due rather to acute than to chronic psychological conditions. There was no one prime cause. He reproached the psychotherapist for forbidding the general physician to treat asthma, and at the same time offering only a remedy which was prohibitively costly in time and money.

Dr. A. BALDIE spoke of the necessity of allowing the patient to find his own solution. If a certain explanation had tremendous significance for the patient, then it was equally significant for the physician. The Adlerian method was the only psychological one suitable to the circumstances of the general practitioner.

Dr. J. COHEN related three cases: one of intractable asthma in an Irishwoman, which was mitigated by various psychological influences; a second of a district nurse who suffered attacks only in two badly lighted villages; and a third in a business man who had to travel, and who suffered from asthma when his wife was not accompanying him.

Dr. A. RIDGEWAY told how a number of Malabar clerks had been cured by their appointment to work in a power-house containing lightning arresters, which were constantly busy and liberated ozone. The patients had, however, remained free from asthma when these arresters were moved outside the building without their knowledge.

Dr. G. DE SWIETOCHOWSKI observed that many male patients seemed to inherit asthma from their mothers, while females inherited it from their fathers. The realisation of this fact sometimes had a beneficial effect. Asthma traceable to the witnessing of parental coitus must, he said, depend not only on the association with feathers, but also on a desire to imitate, or on envy or fear.

Dr. S. CROWN complained that the information the speakers had given did not appreciably help the general practitioner. He asked whether a medical man could promise a chronic asthmatic that if he went to a psychologist at the cost of a certain amount of time and money he could really expect to be benefited. Adrenaline remained, he declared, the only reliable palliative; ephedrine had not come up to expectation.

Dr. H. HODGE stressed phobia as the essence of asthma. He said that ephedrine and adrenaline were effective because the fear reaction was closely allied to the function of the adrenals. Pituitary extract and adrenaline had in one case made an attack worse, and the patient had only been calmed by the dangerous method of atropine and morphine. He never used morphine for a patient under 50. Patients might improve in hospital by getting rid of the source of their fear.

In reply, Dr. ORIEL said that so far from asthma being incurable, 70 per cent. of cases could be very much relieved.—Dr. CULPIN proposed, instead of "cause," the word "constellation." Some general practitioners, he said, were not fitted to treat cases on psychological lines, but others were highly gifted. Nevertheless, the general practitioner should avoid anything in the nature of psycho-analysis or he would get into a tangle. Adler's was, he said, a naked-eye pathology only, but his only complaint against the school was its insistence that its own doctrine represented the whole story. It helped the general practitioner more than a perusal of the whole of Freud's works. Some patients were in such a psychological state that they could not go far without a mother representative; hence the immunity from asthma in the wife's company. An association with parental coitus would be complicated by all kinds of very deep emotional factors.

The PRESIDENT remarked that asthmatic patients by no means always recovered in hospital.

LIVERPOOL MEDICAL INSTITUTION

AT a meeting of this institution on Oct. 12th, with Dr. H. R. HURTER, the president, in the chair, a paper on

Carcinoma of the Scrotum

was read by Mr. J. COSBIE ROSS. The condition, he said, though particularly amenable to surgical interference, was largely neglected in the text-books. The four cases he described were none of them associated with mule-spinning; the predisposing cause was chronic irritation by the clothes, stiffened by oil, dirt, or rigidity of the material. Two out of five scrotal tumours on microscopical section proved to be basal-celled carcinoma undergoing squamous-celled evolution, so that in a certain proportion of cases the sequence appeared to be: rodent ulcer, transitional tumour, epithelioma. This view was supported clinically by a case in which an epithelioma and a transitional tumour were present together on either side of the media raphé. Treatment, both of primary growth and of inguinal glands, should be by surgical excision rather than by radiotherapy, which had proved disappointing. It was unnecessary, however, to remove both growth and glands en bloc, for in this region cancerous spread was by lymphatic embolism and not by permeation. Excision of the fatty glandular mass in the groin should be wide, and include glands situated just internal to the anterior superior iliac spine, since the lymphatic trunks draining the anterior aspect of the scrotum near the raphé ran directly to these glands. Mr. Ross thought it advisable to deal with the glands in all cases of transitional tumour.

In the discussion which followed, Prof. LEYLAND ROBINSON drew attention to the points of resemblance between scrotal tumours and neoplasms of the vulva. The scrotum and vulva were homologous structures and their lymphatic drainage systems were alike; in both conditions excision gave better results than radiotherapy, although it was difficult to obtain primary union of the flaps. It had been suggested that irritation by mineral oils played an important part in the production of vulval, as in scrotal, cancer; but the clinical evidence of this had not been sufficiently tested by control cases taken from areas in which mineral oils were not in common use. In this respect, Mr. Ross's cases were especially interesting, for none of his patients had been submitted to the irritation of soot or mineral oil.

Dr. T. B. DAVIE spoke of the observation of Ewing and others that the malignant growths of the scrotum were almost always poorly differentiated epitheliomas and rarely showed the multiple cell-nests of a well-differentiated or acanthomatous epithelioma. He commented on the occurrence of two rodent ulcers among the five tumours described by Mr. Ross, and suggested that their appearance at this point was a reminder of the fact that the median raphé of the scrotum was a line of embryological junction of epithelium.

Diuretics and Œdema

Dr. I. HARRIS, Mr. R. SHUTT, and Dr. E. L. RUBIN contributed a paper on the action of some diuretics in cardiac œdema. It was found that Salyrgan improved diuresis as well as increasing salt excretion, but it might do one or the other; in either case the œdema diminished. Blood chloride always fell under salyrgan; hæmoglobin was also reduced, proving that there was a condition of hydræmia, and this condition was found as long as 24 hours after the drug's administration. The bases, potassium, sodium, magnesium, and calcium, were diminished four hours after the injection, but were normal after 24 hours. The urine contained an enormous amount of base, particularly potassium and sodium, after administration of salyrgan, and in some cases a big increase was still noticeable after three or four days. The efficiency of salyrgan was improved by giving ammonium chloride and sometimes by giving a salt-free diet. Salyrgan had a double action; it was a tissue diuretic, taking fluid from the tissues and bringing it into the circulation, from there to be excreted to the kidney, and it also acted on the kidney—otherwise the improved excretion of urine for concentrated salt could not be explained. Ammonium chloride had a similar action. By producing acidosis, it brought into action a mechanism to counteract the abnormal acidity; this mechanism set free base, particularly potassium and sodium; and this was excreted by the kidney, taking water with it. The blood chlorides, however, were always increased after ammonium chloride, and hæmoglobin increased too. Blood bases were diminished when fluid was restricted and were normal when fluid was excessive. The drug acted better under a régime of restricted fluid.

REVIEWS AND NOTICES OF BOOKS

Bentley and Driver's Text-book of Pharmaceutical Chemistry

Second edition. Revised by JOHN EDMUND DRIVER, Ph.D., M.Sc., A.I.C., Lecturer on Chemistry in the University College of Nottingham. London: Humphrey Milford, Oxford University Press. 1933. Pp. 538. 16*s*.

IT is claimed for this book that it "now meets the requirements of those studying for any of the examinations in pharmaceutical chemistry of the pharmaceutical societies, boards, or universities of the British Empire." This may well be believed. It is even likely that the book more than meets these requirements; it would certainly terrify the average pharmacist to be told that he would be examined on its contents.

It is, no doubt, difficult for an author to express individuality in a book written to prepare people for examinations rather than to give them ideas, but as examinations must be negotiated before real work can be begun, it should be said that this is a good book for its purpose. The chemistry needed for the understanding of most substances used in medicine is clearly outlined. The theoretical part is excellent. About one-third of the 70 odd pages devoted to analytical methods is taken up by two chapters by Dr. E. B. R. Prideaux on hydrion concentration—a notable sign of the times. The chart which shows the colour changes, with varying pH, of common indicators, should be used in reading these chapters, although Prideaux does not seem to refer to it. With this exception the illustrations appear mostly to be taken from the catalogues of apparatus sellers. They serve to break up the letterpress and confirm the impression that the author is most at home when he is writing concise and lucid monographs on the chemical nature and relations of the many substances covered by his syllabus.

Practical chemistry is best learnt by working in the laboratory, but what printed instruction is given should be useful. The omission, on p. 35, of the information that it is necessary to filter from silver halide before titrating the excess of silver with thiocyanate, when determining halogens in acid solution by Volhard's method, is likely to lead to an unjust conclusion that this method is lacking in precision; and in describing Mohr's method it would have been well to stress the need for a good excess of chromate to depress the solubility of silver chromate, the separation of which indicates the end-point. The statement that "sodium chloride is not very soluble in hot water" is followed by a table showing that water will dissolve at 100° C. 38 per cent. of its weight without any indication that it is the relative solubility in hot as against cold water that is under discussion. It is not correct that calcium carbonate (p. 153) is less soluble in water than barium sulphate (p. 158). The statement at the bottom of p. 171, "232·7 grammes of HgS is equivalent to Hg," lacks precision. In the description of methods of elementary analysis of organic compounds no indication is given of the precautions necessary in determining the carbon and hydrogen in a compound which may contain nitrogen, sulphur, or halogens; whilst the soda-lime process of Will and Varrentrap for determination of nitrogen is surely only of historic interest. The iodine absorption of oleic acid is not 80 as stated on p. 322 but 90.

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This monograph deals purely with the laboratory and experimental side of the chemotherapy of tuberculosis. Dr. Ansbacher endeavours to investigate some of the salts of copper in relation to their therapeutic value. A useful introduction deals with the history of the subject and is followed by two chapters on the methods of analysis of copper salts in the viscera of animals, in the second of which some figures are given for normal controls which will prove of service to other workers. The rest of the monograph is devoted to a series of experiments with different preparations of copper and with controls, and includes tables of results, one of which extends over 16 pages, i.e., almost one-fifth of the book. Dr. Ansbacher concludes that certain compounds of copper, insoluble in water but soluble in oils, offer a hopeful line of investigation in the treatment of tuberculosis, especially when used in low dilutions. A bibliography is appended.

Journal of Pathology and Bacteriology

THE September issue (Vol. XXXVII., No. 2. pp. 169–335) contains the following papers: Species Immunity to Virulent Streptococci, by H. B. Day (London). All virulent streptococci, hæmolytic and non-hæmolytic, produce a common antigen which makes animals resistant with sera which will confer passive immunity.—The Classification of Dysentery-*coli* Bacteriophages: a correlation of the serological classification with certain biochemical tests, by F. M. Burnet (London). Sensitivity to photodynamic action and inactivation by urea are correlated with serological affinity and to some extent with size.—Factors Influencing the Pathogenicity of Bacteria, by F. H. Teale (London). The most interesting observations in this rambling paper refer to the paramount importance of tissue damage in promoting infection.—Acute Pericarditis: a review of 215 autopsies, by L. N. Pyrah and A. B. Pain (Leeds). The most common precedents are pyæmia and septicæmia (especially with osteomyelitis), empyema, and pneumonia.—The Stability of the mitis, intermediate, and gravis Types of *B. diphtheriæ*, by M. H. Christison (Edinburgh). Colony form varies, and is not stable, but gravis strains always ferment starch.—Outbreaks of Infectious Ectromelia in Laboratory and Wild Mice, by C. A. McGaughey and R. Whitehead (Manchester). This ill-named disease is evidently common to those who have eyes to see it.—The Importance of Adequate Reduction of Peptone in the Preparation of Media for the pneumococcus and other organisms, by H. D. Wright (Sydney). An interesting account of how the unsuitability of various current media for the pneumococcus was tracked to its source.—Observations on the Functions of Mucus and the early stages of bacterial invasion of the intestinal mucosa, by H. W. Florey (Sheffield). Particles and bacteria are collected up in the mucus by the wriggling action of the villi.—Renal Lesions in Eclampsia and Nephritis of Pregnancy, by D. Baird and J. S. Dunn (Glasgow). See p. 986.—The Pathology of the Reticular Tissue, illustrated by two cases of reticulosis with splenomegaly, and a case of lymphadenoma, by J. M. Ross (London). This was reviewed in THE LANCET of Oct. 14th (p. 871).—Congenital Cyst of the Œsophagus, by B. S. Cran (Aberdeen).—A case of Multiple Myelomatosis with generalised amyloid-like deposits and unusual renal changes, by M. L. Rosenheim and G. P. Wright (London).—The Discoloration of Heated Blood-agar by Streptococci, by P. D'A. Hart and A. B. Anderson (London). Due to hydrogen peroxide.

NEW INVENTIONS

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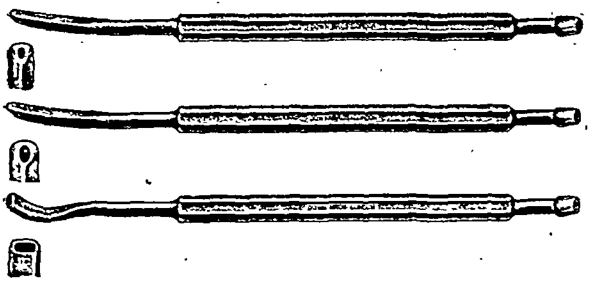
THE instruments here illustrated are triangular on transverse section; in the apex of the triangle runs the suction canal, while the angles at the base form the cutting edges. These angles are about 60°, and when sharpened the edge is exactly the type that enucleates most efficiently. It is easy to cut through the mucous membrane without damaging the tonsil capsule, thus finding the right "layer" without difficulty. At the same time the toughest bands of fibrous tissue can be severed. The canal opens at the very end of the instrument directly adjacent to the cutting edge, and it is large enough to break up a blood clot when used with an electric suction pump. In spite of this the instruments are not bulky. I use a foot-switch to control the pump during the operation. The smaller of the two instruments is used for making the initial incisions and for freeing the upper pole of the tonsil. The larger one is used after the upper pole is free for sweeping out the remainder of the tonsil. The curved retractor enables one to retract the anterior pillar so as to get a good view of the tonsil bed, and at the same time to suck out blood so that the securing of bleeding points is greatly facilitated. The advantages of these instruments are: (1) the time of operation is at least halved; (2) difficult operations made easier; (3) perfect visibility; (4) less hæmorrhage; (5) less post-operative pain. When using these instruments enucleation of the tonsil becomes a quicker, safer, and easier procedure.



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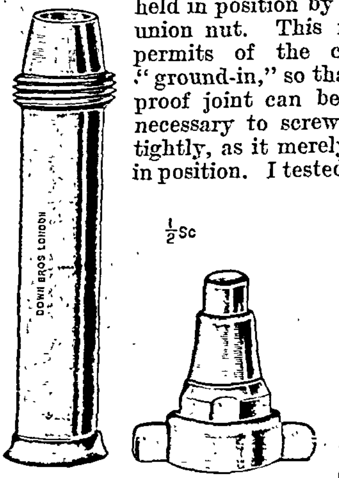

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THE LANCET

LONDON: SATURDAY, OCTOBER 28, 1933

THE CONTROL OF MEASLES IN LONDON

London, with other large cities, suffers from biennial epidemics of measles; and since epidemic prevalence of the disease begins here in the autumn of the "odd" years, the next visitation is presumably imminent. The county medical officer's report[1] on measles in 1931–32 therefore appears very opportunely. Prepared under the general editorship of Dr. J. A. H. Brincker, it is the third of a series of special reports on the disease, and, as Sir Frederick Menzies points out in a foreword, it is of special interest not only because it is so comprehensive but also because, for the first time, responsibility for control and treatment during the whole epidemic was confined to two authorities—the London County Council and the metropolitan borough councils, acting in close coöperation—instead of being divided among several.

The dimensions of the epidemic were much the same as those of its recent forerunners. The medical officers of health of 27 metropolitan boroughs received information as to 55,545 children suffering from measles, the highest incidence falling upon children in the 4–5 years age-group. According to the records of 24 boroughs the case mortality was 1·6 per cent. at all ages, ranging from 8·6 per cent. amongst infants under one year of age to fractions of 1 per cent. amongst children over three years of age. The infection began to be prevalent, as usual, at the end of October, but, as Dr. Brincker shows, the progress of the epidemic was unusually delayed, and real pressure upon the accommodation in the L.C.C. hospitals was not felt until February. From that time the numbers of measles patients admitted steadily increased until on April 10th there were no less than 2767 cases in the wards. When it is considered that even at the height of the epidemic all demands for beds in the infectious hospitals were met, except for a certain number of cases of minor infection admitted to general hospitals, this is a notable achievement. The decline of the epidemic was also slow, for only by the end of August did the daily number of admissions return to normal. In all, 11,526 measles patients were admitted, nearly a fifth of the known cases, and the deaths numbered 647 (5·6 per cent.). This means a further decline in the mortality of cases treated in hospital —it was 7 per cent. in 1927–28—but Dr. A. F. Cameron thinks the fall is probably due to less discrimination in the removal of patients to institutions. Indeed, the opinion is expressed in the report that many of these patients could just as well have been cared for in their homes, especially if full advantage had been taken of the home-nursing facilities provided by the borough councils. Indiscriminate hospitalisation, particularly of very young children, is undesirable upon several grounds, and while accommodation should be available for all under five years of age whose home conditions are such as to prejudice their chances of recovery, Dr. Cameron holds that with children over five, severity of attack alone should justify admission to hospital. Even so, however, since the proportion of children under five attacked during an epidemic is well over half the total, and since the conditions in the majority of London working-class homes are regarded as unsuitable, the problem of hospital provision for measles is no easy one to solve.

It is estimated that about half the fatal cases are secondary cases, and this shows the importance of promptly recognising measles and protecting susceptible contacts. In London school closure has been definitely abandoned in favour of daily surveillance by school nurses and health visitors with the object of detecting the disease in its earliest stages and providing either home-nursing or hospital treatment as circumstances dictate. Valuable as they are, however, these measures cannot afford any real protection for the exposed susceptibles; they cannot appreciably lessen the crop of secondary cases; and real protection is only given by passive immunisation. Attempts to produce specific animal sera have so far failed, but injection of the pooled serum of convalescents is a prophylactic measure of proved value which (according to the time of its administration) will secure either complete temporary protection or attenuation of the severity of the attack with resulting solid active immunity. But wherever prophylaxis with convalescent serum has been attempted on any large scale, as in France, the difficulty has always been that the demand far exceeded the supply. It is fortunate therefore that the serum of adults who have had measles in childhood retains, to a considerable degree, the specific protective properties acquired during the attack, thus providing, potentially, an abundant source of supply. Adult-immune serum was first used by R. Degkwitz in 1920, and subsequently by numerous French workers, notably R. Debré. Its employment in this country was first recorded in 1930 by E. H. R. Harries[2]; and in November, 1931, it was decided by representatives of the Ministry of Health, the Medical Research Council, and the L.C.C., to inquire into the value and scope of adult serum with a view to providing a general serum "pool." Dr. William Gunn was placed in general charge of the investigation, and blood was obtained from voluntary donors, chiefly on the Council's nursing staff, and also, with the collaboration of Prof. C. C. Okell, from medical students at University College. Some 26 litres of serum were prepared by Dr. J. E. McCartney according to a technique described in the report, and it was used either for prevention or attenuation in the L.C.C. special and general hospitals. The minimum dose was 10 c.cm. for children under three; for those over three the dose in cubic centimetres was arrived at by multiplying the child's age by four. Adult serum was injected either for prevention or attenuation into 1475 children, the controls being 680 injections of convalescent serum, and observations on 207 uninjected contacts during the same epidemic period. A large number of observations upon convalescent serum were made by Dr. D. N. Nabarro at the Hospital for Sick Children, Great Ormond-street. The whole of the results were submitted to Mr. W. T. Russell, of the London School of Hygiene and Tropical Medicine, for statistical analysis, and Dr. Gunn, from consideration of the clinical data controlled by statistical methods, concludes that while convalescent serum is a more potent prophylactic than adult serum for each age-group, the difference between them is of statistical significance only in respect of children under five years of age, and, even so, only in respect of injections given on or before the third day after exposure. After five years of age there is nothing to choose between them—apart from the fact that adult serum must be given in larger quantities. It is found that the attenuating results with half the standard dose given before the sixth day are as good as those with a full dose given on or after the sixth day, and hence, if attenuation is wanted, an important economy in serum is possible by adopting early injection. Dr. Gunn believes that the data show conclusively that adult serum is valuable for measles prophylaxis, that it is only slightly inferior to convalescent serum in its protective and attenuating action, and that it merits a high place in any future policy of measles control. It is to be hoped that this investigation will lead to its extensive use not only in London but throughout the country.

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[1] Obtainable from P. S. King and Son. London. 1933. No. 2996. 2s. 6d.

[2] Med. Officer, Feb. 15th, 1930, p. 77; see The Lancet, 1930, i., 519.

CALLUS IN BONE REPAIR

Solution of continuity in most parts of the body is adequately repaired by fibrous tissue. Repair of bone by any tissue other than bone itself so completely destroys its function as to be called non-union. In the healing of fractures the formation of callus is the intermediate and characteristic process which determines that a non-differentiated granulation tissue, essentially of the same nature as appears in the healing of all wounds, shall develop into an organised calcified tissue. Recognition of the steps in the repair of a fracture—effusion of blood around the bone ends, deposition of calcium in young connective tissue to form the so-called primary callus, conversion of this into "bone callus" by the growth of trabeculæ, and the final reconstruction of typical bony tissue displacing the callus—is a commonplace of medical teaching. Appreciation of the factors which determine the occurrence of calcification, of ossification, and of pseudo-arthrosis is of recent date, and is as yet by no means general. Modern opinions on these subjects are based on the work of R. Leriche and A. Policard, published in 1926 in their "Physiology of Bone," and on the monograph on the "Pathology of Bone" (1931) by Prof. D. M. Greig, of the Royal College of Surgeons of Edinburgh. In these two volumes there is a complete departure from classical views on the osteogenetic power of the periosteum, and the osteoblast is displaced from its pedestal.

In brief, the thesis of Leriche and Policard[1] is that hyperæmia of bone, whether from injury or disease, leads to a fairly rapid decalcification; whereas diminished blood-supply is followed by deposition of calcium—a process which is especially well marked in tissues of low metabolism. At the ends of long bones which are for some reason prevented from uniting, and are therefore functionless, the calcium deposition may be followed by sclerosis. In the words of Greig, calcification is a sign of functional death. Ossification, on the other hand, is a sign of life. It can occur in the combined presence of fibroblasts and of an excess of calcium, provided only that the local blood-supply is adequate. Vascularity of the part, local excess of calcium, and the proliferation of fibroblasts are what Greig terms the "synthesis qualified for the production of new bone." Before the injured bone ends can be reossified, Leriche and Policard believe, the tissues of which they are composed must revert to the primitive mesoblastic type from which all connective tissues are evolved. Decalcification is the first stage in this process; at the same time it provides the local excess of calcium required. For it seems to be established that the calcium used in the repair of a fracture is obtained from the neighbouring bone, and not from the blood.

The sequence of events after a fracture can be summarised thus. The injury to the bone and to the soft parts, and in particular to the muscle, leads to a rapid effusion of blood. A hæmatoma is formed which strips up the periosteum to a varying extent. Local hyperæmia also develops, owing, in part at least, to the vasodilator action of the toxins freed by the trauma to the tissues. Calcium is mobilised from the injured bone ends. Within a few hours the hæmatoma proceeds to organise, and fibroblasts grow into it, just as in the formation of granulation tissue elsewhere. The surrounding connective tissues, whether muscle, fascia, or strands of torn periosteum, by reversion to the common mesoblastic type, are enabled to participate in the process. The preosseous substance of Leriche and Policard is laid down among the connective tissue cells, and calcium is deposited in it. If anything happens to prevent this deposition of calcium, the connective tissue may follow its natural tendency, which is to form fibrous tissue, and there is always a race between the formation of fibrous tissue and the formation of bone callus. The factors which turn the scales in favour of bone formation are a reasonably accurate apposition of the ends of the bone, and a good local concentration of calcium. If the calcium mobilised from the bone ends is dispersed, either by suppuration or by effusion of synovial fluid, there is no satisfactory formation of callus. If there is poor apposition of the fractured ends, the fine osseous trabeculæ fail to grow across the gap in time, and the result is fibrous union. Lack of apposition may have various causes, such as failure to reduce the fracture, or over-extension by too efficient skeletal traction. It may also be due to interposition of muscle tissue between the bone ends. Fibrinous deposit on the muscle and encysted serum form insuperable barriers to the growth of bone callus. From the point of view of ultimately effecting union, the worst that can happen is that the ununited bone ends become devascularised; the sequence then is calcification and eburnation, and the formation of a false joint. If the bone remains soft and vascular, operative fixation may be mechanically difficult, but the chances of its being followed by osseous union are very much better.

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[1] The theory was clearly expounded by Mr. R. Watson Jones and Dr. R. E. Roberts at a meeting of the radiological section of the Royal Society of Medicine last March (see The Lancet, 1933, i., 639), and was also discussed by Mr. St. J. D. Buxton in his recent presidential address to the section of orthopædics (see The Lancet, Oct. 7th, p. 808).

Once a definite bone callus has formed, firm osseous union is likely. Growth of vessels and of orderly trabeculæ bridge the gap, and gradually displace the delicate and irregular trabeculæ of the callus. The calcium originally laid down in the organising hæmatoma is now used as a source of calcium for the developing bone. The periosteum is described by LERICHE and POLICARD as having a limiting and restraining action on the formation of callus, and this agrees well with radiological observations. Where there is little or no displacement, and consequently little disturbance of the periosteum, the amount of callus is small and, incidentally, union tends to be slow. In fractures involving much tearing and stripping up of the periosteum—as, for example, in the supracondylar fracture at the elbow—the formation of callus is irregular and excessive and extends into the muscle planes. If early movement and massage are resorted to, this callus becomes vascular and ossified—the so-called myositis ossificans.

The formation of a definite hæmatoma seems to be a most important factor, and W. J. POTTS[2] has tested this point in a series of controlled experiments on fractures artificially produced in animals. His results show that callus formation is definitely less if the blood is carefully sponged out than if it is left intact. Introduction of fresh blood to the site of fracture increased the amount of callus formed; introduction of washed fibrin had not this effect. The part played by the hæmatoma is probably not a simple one. In the first place, by stripping up the periosteum it gives an opportunity for freer development of callus. It also acts as a scaffold for the young fibroblasts and as a non-functional tissue in which calcium can be deposited. POTTS has suggested that the hæmatoma takes up phosphatase, an enzyme said to be secreted by the bone ends and initiating the chemical change of calcium which occurs during its deposition. Trypsin was injected in a 1 per cent. solution to the site of the fracture by KUGELMASS and BERG.[3] This had the effect of digesting away the organising blood clot, and resulted in delayed union. Accelerated union was produced by the same observers by introducing fibrinogen and thus stimulating the formation of young fibrous tissue. Actual hypertrophy of fibrous tissue results when movement of the affected part is free—a fact that is obvious to anyone who observes the healing of a scar on the neck—and complete immobilisation of a fracture during the stage of callus formation seems to have a sound scientific foundation. Once union by clinically firm callus is secured, the development of true vascular bone is probably encouraged, however, by increased functional activity and improvement of the circulation. In other words, disuse in the early stages will help the deposition of calcium and discourage the development of fibrous tissue. Use in the later stages will increase the vascularity which is the determining factor in the ossification of the callus.

THE FACT OF DEATH

ARDENT advocates like the late Sir GEORGE GREENWOOD laboured in vain to change the law of death certification so as to eliminate the risk of premature burial or failure to detect crime. This danger exists at present because it is possible for a certificate to be given on insufficient information. A recent case, disclosed at an inquest held last week at Bootle, may revive the public demand for a reform of the law. A woman gave birth to twins (a boy and a girl) on Oct. 1st. Dr. A attended her on that occasion; when he subsequently saw the babies on Oct. 9th, the boy's condition was precarious. On the 16th the child had convulsions. The mother and grandmother believed it was dead. The grandmother went to Dr. A and asked him to give a certificate of death. The doctor explained at the inquest that, at the moment of her visit, he had 30 or 40 patients waiting to consult him; he told her that he could not possibly come to see the child, and he advised her to call in another doctor. She pressed for the certificate nevertheless, and he signed it as the law authorised him to do. Section 20 of the Births and Deaths Registration Act, 1874, contemplates that the registered medical practitioner who attended the deceased "during his last illness" may sign in such circumstances, and the prescribed form of certificate is equally clear. There may sometimes be doubt as to the meaning of attendance during the deceased's last illness, but probably nobody would dispute that Dr. A had this qualification for certifying in the present case. The baby, however, was not dead. The mother and grandmother were mistaken. The mother's brother went off and reported the dubious position to the police. Another doctor came to examine the child; he found it alive, but it died at 4 A.M. the following morning. The coroner stated that no blame whatever attached to Dr. A, but naturally the dangers inherent in the present law have since been a matter of public discussion.

The Home Office committee on the law of coroners reported as follows in 1910:

> "A certificate of death should not be accepted from a medical practitioner unless it states that he has, by personal inspection of the body, satisfied himself as to the fact of death. At present he may certify

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[2] Surg., Gyn., and Obst., September, 1933, p. 318.

[3] Amer. Jour. Dis. Child., 1931, xli., 236.

merely on the information given by the relatives and we have had evidence that many certificates have been carelessly or even recklessly given. It is no fault of the law if premature burials do not take place. The present law of death certification offers every opportunity for premature burial and every facility for the concealment of crime."

These vigorous statements justified the Federation of Medical and Allied Services in preparing a Bill to change the law. In 1923 Sir FRANCIS FREMANTLE presented the Bill in the House of Commons. It required two certificates—a medical certificate of the fact of death and a certificate of the cause of death—before death could be registered, and it insisted that the fact of death must be certified by a registered medical practitioner who had viewed and examined the dead body, and was satisfied that life was extinct. There is no need to elaborate the fact that mistake may easily be made over the apparent manifestations of death. The late Sir FREDERICK TREVES published his recollections of cases of this kind; Sir GEORGE GREENWOOD enumerated other cases in his pamphlet on the Law of Death Certification. When Parliament discussed the Federation's proposals, the spokesman of the Ministry of Health observed that, if there were a complete medical inspection in every case as some people desired, it would mean heavy expense, and "would set up a universal and compulsory requirement for a very small chance indeed." The Federation's Bill was replaced by an official measure which became law in 1926.[1] The new Act contained no requirement as to examination of the body after death, although in the course of the debate someone quoted the Registrar-General as having declared that "only 40 per cent. of the people buried in this country are certified on medical evidence actually to be dead." A fresh change in the law will come on the day when some sensational case stirs public opinion. The incident at Bootle was a genuine mistake with no serious consequences. As the coroner observed, it would have been otherwise if there had been any suspicion of foul play or any evidence of heavy insurance.

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[1] See THE LANCET, 1926, ii., 1295.

ANNOTATIONS

PRESIDENTS AND PROPHECIES

WHEN, on Friday last, Oct. 20th, Dr. Charles Porter, M.O.H. for the borough of St. Marylebone, delivered an address before the Society of Medical Officers of Health on his installation as president, he introduced a new responsibility for himself and his successors in the important post by an inquisition into how far the things predicted in the expansiveness of such deliveries came afterwards to materialise. Dr. Porter was able to find in the earlier orations much wisdom, and where his researches were not thus rewarded he made no detailed references. But the fact that, save in one or two instances, the forecasts of the presidents of the Society, since its foundation nearly 80 years ago, have not been much or exactly borne out has a great implication, and one that is at bottom a proof of the pace at which sanitary science has developed. As growth was rapid and prolific so it became impossible to foresee ramifications. The failure to prophesy thus showed a prophetic instinct, the instinct that unpredictable things were at hand. The case of the first president, Sir John Simon, is different. He occupied the chair for several years and whether he delivered a set address at the beginning of each session or no is uncertain; our excellent contemporary *Public Health* was not founded as the journal of the Society until 1888, before which date no precise records are forthcoming. But what Simon may have said can be deduced from what he did, and he was in the favourable position for a prophet of being largely able to bring about the things which he foresaw would conduce to the realisation of his views. We learn from Dr. Porter that between the foundation of the Society in 1856 and the first issue of *Public Health* there were 15 presidential addresses delivered, and Dr. S. R. Lovett, who was president in 1894, gave in a retrospective résumé the titles of these, from which one sees the extreme improbability that accurate prophecies could be made. The fundamental alterations in scientific, economic, and social activities that were beginning to occur some 80 years ago, and which have multiplied and gathered force ever since, must have constantly interfered with accurate forecasting. It is clear that deliveries upon such themes as the Cause of Disease, the Sanitary Condition of Communities, or the Scientific Work of the M.O.H., could contain only vague guesses, while new phases of pathology were becoming manifested daily in an environment which was rapidly revolutionising itself. Among the great sanitarians who were able in certain directions to look accurately into the future, a place must be found for Shirley Murphy, president in 1891–92, who foresaw the benefits to health that would follow proper inspection of animal food-supplies while indicating the measures needed for that end. Dr. Spottiswoode Cameron, also, who was president in 1902, was successful as a seer, his views in respect to housing and slum clearance having in certain directions been already adopted. And Sir John Robertson, president in 1916, said in October of that fearful year that the cause of public health would be hastened and not retarded by the war, an outlook which has proved amply correct. Dr. Porter's comments on the words of his predecessors brings out one striking thing: none of the fine and experienced workers in public health who were presidents of the Society in the earlier days ever seemed to contemplate the striking diminutions in the commoner infections that we now enjoy and that they were working to bring about; not one of them would have dared to suggest the possibility of such figures as our present vital statistics furnish.

THE DIAGNOSIS OF UNDULANT FEVER

UNDULANT fever, which many years ago was referred to by Nicolle as the "disease of the future," is now being regarded as the disease of the present. Not only in this country—where, according to Dalrymple-Champneys, actual records of about 190 cases have been obtained, and where, according to G. S. Wilson, serological evidence suggests an incidence of about 500 cases a year—but also in other parts of Europe and in the United States of America it continues to cause the liveliest concern. Diagnosis is usually made on the basis of the agglutination reaction, a titre of 1/100 or over in a pyrexial patient who is not in continual contact with infected animals, and who is not in the habit of consuming large quantities of infected raw milk, being generally a reliable indication of active infection with brucella. Whenever possible blood cultures should be taken and incubated both in air and in an atmosphere of 10 per cent. CO_2. While, however, the causative organism can generally be recovered from patients with *melitensis* infections, the proportion of *abortus* cases yielding positive blood cultures is much lower—probably of the order of 15 per cent. Recent studies reported by Huddleson, Johnson, and Hamann[1] in Michigan suggest that, even with the use of blood cultures and serum agglutination tests, a certain number of definite cases of undulant fever are being missed. They have therefore been exploring the use of two other tests in diagnosis—the allergic skin reaction and the opsono-cytophagic index. The latter reaction is carried out by incubating 0·8 per cent. citrated whole blood with a thick suspension of brucella for half an hour at 37° C., making films, counting the number of ingested organisms in 25 leucocytes, and recording the results on a percentage scale. For the skin reaction a special nucleoprotein is used. In susceptible but uninfected persons both these tests are negative. In infected patients the skin test is positive and the cellular index negative or low. Immune subjects have a positive skin test and a high cellular index. On the basis of these two tests these investigators apparently feel justified in making a diagnosis of undulant fever even in the absence of agglutinins in the blood-serum. But the method is still far too much in its infancy to be used for routine purposes. Indeed, experience of other fevers affords but little hope that estimation of the bacteriotropins developing as the result of infection are likely to be of much value in the diagnosis of active disease. It has yet to be shown that definite cases of undulant fever with a persistently negative agglutination reaction are at all common. Many positive reactions are undoubtedly missed by use of an unsuitable bacterial suspension, and by failure to put up a sufficiently wide range of dilutions. Zone phenomena are by no means infrequent, and unless dilutions extending from 1/20 to 1/2560 are prepared, occasional cases will undoubtedly be reported as negative. While there is every reason to explore fresh methods of detecting brucella infection, particularly in children, the actual diagnosis of undulant fever in the absence either of a positive blood culture or a positive agglutination reaction must for the moment be deprecated. It is better to leave a fever undiagnosed than to label it on insufficient evidence with a specific name, and thus prevent any further inquiry into its real causation.

STATISTICAL PRESENTATION OF RESULTS OF TREATMENT

"STONE dead has no fellow" is an old saying that is particularly applicable to the assessment of operative success—or lack of success. The survival-rate of cancer patients, for instance, treated surgically or by radium, measured over a period of years, is the only sound criterion of success, and is now being widely adopted. A similar measure has been used to determine the effects of sanatorium treatment of tuberculosis. On the other hand, it is obvious that the survival-rate presents only one aspect of the result of treatment. Survival does not necessarily denote a freedom from disability, and in conditions which only rarely lead to death it is freedom from disability which is the important criterion. The difficulty is to secure an adequately objective measure of freedom from disability. In a study published on p. 999, Dr. H. V. Prynne, the chief medical officer to the Post Office, suggests that such a measure is available for the Post Office staff (numbering nearly a quarter of a million) in the accurately recorded sickness records. For instance, investigating a series of gastric and duodenal ulcer cases, operated upon in different ways, he finds that the average sick-rate per year per employee for disorder of the digestive system was 12 days after gastro-enterostomy, 22 days after suture, 29 days after excision. Taken at their face value, the figures suggest a considerable advantage to the patients treated by gastro-enterostomy. But were patients treated in these various ways actually *in pari materia* before they were relegated to the different operative groups? It must, at the least, seem unlikely; it is not even recorded whether or not any of the operations were undertaken at a critical time, for example, following perforation, and the relative advantages thus become difficult to interpret. Another example that may be cited from Dr. Prynne's paper is the result in 17 cases of exophthalmic goitre of treatment by thyroidectomy. Of these, 12 are reported to have had no recurrence of the condition in periods varying between one and ten years. On the other hand, the average sick-rate for all conditions per year per officer was nearly 29 days, of which 11·6 were due to recurrence of exophthalmic goitre and 5·4 to nervous and heart symptoms probably associated with the condition of exophthalmic goitre. The operation in a number of cases has failed to prevent recurrence, but to deduce therefore that it has been valueless would hardly be justifiable. We do not know, and obviously can never know, how such cases would have fared, and what their sick-rate would have been if they had not been submitted to operation. A more clear-cut issue is presented in the effect of operation on the knee in cases of semilunar cartilage injury. Of 43 non-operation cases 63 per cent. incurred further sick absence due to the old injury or to further accidents to the knee, while of 42 cases operated upon only 24 per cent. incurred further sick absence for similar reasons. It is clear that, in spite of the limitations suggested above, the objective measure of success proposed by Dr. Prynne deserves close consideration by such medical industrial workers as have the sickness statistics of their patients available.

THE VISIT OF PROF. BURGER

THE Semon lecture will be delivered on Thursday, Nov. 2nd, at the Royal Society of Medicine, by Prof. H. Burger, of Amsterdam, his subject being the So-called Associated Paralyses of the Larynx and Pharynx (Multiple Cranial Nerve Palsy). Dr. Burger will deliver the lecture in English; like so many Dutchmen he is an excellent linguist. It was partly for this reason that in 1909 he was appointed secretary-general of the International Committee for the International Congress of Medicine. In this capacity he acted when the last International Congress was held, under the presidency of Sir Thomas Barlow, in London in the year 1913. Dr. Burger is still the secretary-general, but there seems little prospect of another International Congress for general medicine at present. Our visitor is professor of otolaryngology in the University of Amsterdam. He is a man of many interests. He was Rector Magnificus of his university during the academic year 1927–28, and he has three times been president of the Dutch Medical Association. He is a man of culture and wide interests.

On Wednesday, Nov. 1st, at 5 P.M., he will give an address before the section of the history of medicine in the Royal Society of Medicine with the interesting title: the Doctor, the Quack, and the Appetite of the Public for Magic in Medicine.

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[1] Amer. Jour. Pub. Health, September, 1933, p. 917.

THE KIDNEY IN ECLAMPSIA

THE cause and nature of eclampsia is still so obscure that any accurate information about it is welcome. And though Prof. J. S. Dunn and Dr. Dugald Baird, of Glasgow, themselves doubt whether their findings throw much light on the seizures and fatalities of the disease, their careful description[1] of the changes in the kidneys is a valuable contribution to our knowledge of it. In nine out of ten fatal cases of clinical eclampsia they found the same uniform changes in the glomeruli—frequently enlargement and increased lobulation and invariably increased density of the tufts with great diminution or absence of red corpuscles. The deviations from the normal are not dramatically obvious on casual examination and they are made much more plain if the connective tissue is specially stained. It appears then that the thickening and partial obstruction of the capillaries is caused partly by an increase or enlargement of their endothelial cells and, perhaps more definitely, by a swelling of the basement membrane. The lesion is diffuse in the sense that every tuft is involved and the rest of the kidney shows no changes or only such as may be regarded as incidental. Examination of old sections of the kidneys from 30 other obstetric casualties showed the characteristic lesion in 7; the other 23 were free from it—which is sufficient evidence that it is not simply the result of pregnancy. But, Dunn and Baird point out, the change is not severe and, as one of their cases showed, it can be recovered from completely. Hence they suspect that it is the underlying cause of the common albuminuria and nephritis of pregnancy which is usually mild and rarely threatens life; it is revealed by the fatal complication of eclampsia for the development of which some impairment of kidney function is necessary though this by itself will not produce the convulsions and hæmorrhages.

SLUM CLEARANCE

WE have received an influentially signed appeal in favour of reserving, in all plans for reconditioning of new houses, suitable sites for the future building of nursery schools in convenient proximity to the houses. The appeal is timely. Public attention has been acutely raised to the urgency of slum clearance, but it is pointed out by the signatories to the appeal that exclusive concentration on the problem of good houses may result in the missing of a fine opportunity. For better shelter for a large number of families should clearly carry with it better provision for their welfare, and should therefore include attention to the needs of young children. "Especially we wish to urge the immediate reservation of sites for nursery schools," says the appeal. "The very young children, not yet of school age, need care which cannot be fully given by the mother whose energies are fully taxed by the claims of a baby, her husband, and the management of the home. If successful and happy family life is to be maintained she must receive some assistance. It is now widely recognised that the open-air nursery school supplies what is wanted in the best way yet devised. It provides the needed space for the little children's active growth, it supplies medical supervision and healthy conditions, it gives each child opportunity for sound
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THE PROBLEMS OF ASTHM

WHETHER when its secret is ultimately
causation of asthma will be found to be
as at present seems likely, may perhaps
Seldom can the problems of any disorder ha
attention from so many angles as thos
particularly elusive complaint. Hardly an
branch in medicine or its ancillary sciences h
to contribute its quota to the discussion of
In such a welter of opposing views as at
obtain on the subject of asthma, it is difficul
scientific mind to move with precision.
present time a discussion on asthma can b
upon to produce a stimulating debate, tho
views put forward and the wit with which t
controverted will depend largely on what s
have been invited to attend. The recent me
the Paddington Medical Society, reported on
page, was concerned for the most part with arg
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emphasis is laid here, as in connexion with
other disorders, on the underlying nervous fac
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Unfortunately the discussion coincided i
though not in time, with another meeting a
asthma was considered from an entirely new
point. It would have been of interest to st
reactions of those who took part to the ideas
by Prof. J. H. Burn, in his presidential add
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[1] Jour. Path. and Bact., 1933, xxxvii., 291.

[1] See THE LANCET, Oct. 14th, p. 867.

[illegible] sympathetic, Prof. Hurn argued that there must be a certain state of balance at the [illegible] in the [illegible] stimulation [illegible] until it was replenished. Similarly it was found that, in the presence of adrenaline, both [illegible] and sympathetic stimulation produced [illegible] effects which were otherwise not seen; and thus the conclusion was reached that the degree of a person's response to sympathetic stimulation depended on the amount of adrenaline in the circulation.

Prof. Hurn's thesis, therefore, is that those with the least amount of adrenaline circulating will be predisposed to asthma. This conclusion is not out of line with what is sometimes seen in clinical medicine. Although the physician cannot judge of the activity of the adrenal glands with the same accuracy that is possible in connexion with the thyroid gland and pituitary, he is able to suspect strongly in certain cases, other than instances of Addison's disease, that the patient is deficient in adrenaline; and amongst such cases are those of a certain type of asthmatic who is only very temporarily relieved by injections of adrenaline. On the other hand, it is impossible to deny that a great many asthmatics show none of the bronzing of the skin or lowered blood pressure which might indicate persistent adrenal deficiency; and in any case it is impossible to recognise if apparent de-adrenalinisation is due to defective supply or to some abnormal neutralisation of adrenaline in the circulation. What Prof. Hurn has called the "pharmacological approach" is certainly one which will stimulate interest.

QUANTITATIVE DETERMINATIONS IN BACTERIOPHAGE ACTIVITY

The trend of the more fundamental recent work upon the bacteriophage has been in the direction of quantitative measurements of its activity. An important paper by Prof. Georges Dreyer and Miss M. Campbell-Renton[1] offers a good example of the application of such methods and the results which may be achieved by them. These workers have produced a standardised procedure for the production of bare plaques upon thin agar plates by bacteriophage and for the counting of their numbers under varied conditions. By the ingenious device of photographing the plates of growth at an enlargement of 30–35 diameters they were able to count the plaques produced with great accuracy. It has been stated, and widely accepted, that the number of plaques (which d'Herelle regards as colonies) appearing when development is complete is a constant function of the dilution of a phage-containing fluid. Dreyer and Campbell-Renton are able to show that this is not true but that as the concentration of the preparation increases the ratio diminishes. In other words, where a 1 in 512 dilution yields 35 plaques, a 1 in 64 dilution yields 198, instead of the theoretical 280. From a large number of observations of bacteriophage action at different dilutions, they have been able to construct a standard curve illustrating this relationship, which they have found to be constant for all varieties of phage and substrate organisms examined. From the same results they have defined a formula for the relationship of different concentrations which gives a curve closely approximating to their actual findings within the limits of their observations. Applying these results to a number of observations by other authors they show the same relationship to be present. Other observations which have been made in the light of these findings are upon the relationship of the agar concentration to the number of plaques developing and the deterioration of a bacteriophage preparation at 37° C. In respect of the first of these they find that a given staphylococcal bacteriophage is twice as active on 1·5 per cent. agar as upon a 4 per cent. medium as regards the number of plaques produced, whilst the size of these is less upon the denser medium. As to deterioration, it has been found that after 24 hours at 37° C. the strength of a given bacteriophage is less than half that of the original preparation. Dreyer and Campbell-Renton also produce measurements showing the degree to which dead organisms in a culture inhibit bacteriolytic activity. Such results are not only extremely interesting in themselves but are of great importance to those working upon the quantitative aspects of this problem, for they emphasise the necessity for the strictest control and illustrate the pitfalls which may be entered in assuming that unexamined factors are of no importance.

THE ROBERT JONES MEMORIAL

Early in the year we published an influentially signed appeal for contributions to a national memorial in commemoration of the life and work of Sir Robert Jones, the world-known orthopædic surgeon. The proposal placed before our readers was to found a lectureship in the Royal College of Surgeons of England bearing his name and associated with a travelling research fellowship in orthopædics, this to be awarded alternately by the College of Surgeons and the University of Liverpool with which Robert Jones had a lifelong association. We have now received a letter bringing the scheme of the Memorial forward in more detail. The signatories to the letter are Lord Athlone, Lord Derby, Lord Moynihan, Lord Dawson of Penn, Sir Holburt Waring, and Lieut.-General H. D. Fawcus, and their message to our readers is that the Memorial should bear testimony to Robert Jones's constructive idealism and his deep devotion to the care of crippled children, and to the study of such preventive measures as would prevent the life-long damage following upon ignorance or neglect.

We commend the appeal to the notice of our readers as one that should not only be personally supported, but could be well brought through their influence before the public, for it is a public responsibility that Robert Jones's name should be affectionately remembered and that the work which he initiated should go on. Donations may now be forwarded to the hon. treasurer of the Robert Jones National Memorial, Quadrant House, 55, Pall Mall, S.W.

NOBEL CENTENARY PRIZEMAN

The hundredth anniversary of the birth of Alfred Nobel fell on Saturday last, when the Nobel prize in medicine or physiology was awarded to Thomas Hunt Morgan, professor of biology since 1928 in the California Institute of Technology. Prof. Morgan's claim to the laurel is unquestioned, for no one has done more to clear up the mechanism of Mendelian heredity. Mendel himself worked out his genetic hypothesis on noble and beautiful members of the animal and vegetable kingdom whose cycle of development was completed in terms of months or years. Morgan worked them out on the [illegible] and address before the section of the history of medicine in the Royal Society of Medicine with the interesting title: the Doctor, the Quack, and the Appetite of the Public for Magic in Medicine.

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NOBEL CENTEN

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THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

III.—WATER-SUPPLY IN RELATION TO DISEASE

FROM the earliest times it has been recognised that n ample supply of pure water is essential to any ommunity, and the great aqueducts that brought water to ancient Rome are familiar to all. During this century Sir Arthur Evans has discovered in the palace of Knossos, built 4000 years ago in Crete, a ne of terra-cotta pipes laid at the side of a paved ad. These pipes led from the hills, from which an queduct still supplies Candia. Each pipe is 2½ ft. ng, with a diameter of 6 in. at the broad end and in. at the narrow end. Ridges and raised collars e provided at the ends of the pipes, which give an tra hold over the cement binding the two pipes gether.

All water comes from rain or snow, and when it ls part is evaporated, the amount varying with the nperature, a second part flows off in the direction the incline of the surface, and a third part sinks o the soil. The latter forms the subterranean rces of water whose natural outlets are springs d whose artificial outlets are wells. The sources water-supply are :—

(1) *Rain water*, which may be collected from roofs from prepared surfaces, a well-known example ing the eastern face of the Rock of Gibraltar. The nfall in England varies from 20 in. on the east st to more than 100 in. per annum on the coast umberland, 1 in. of rain being equal to 101 tons vater per acre. If rain water is used for drinking poses the first washings of the roof should be cted, as it will contain impurities. Rain water is soft and should be stored in an underground rn which should not be made of lead.

) *Upland surface water*.—Rain falling on mouns and moors runs off in streams and may form s. In order to facilitate the water-supply ms may be impounded by building a dam across lley. Reservoirs thus made may be a great nce from the towns they supply. The water of chester is brought 90 miles from Thirlmere, vater of Liverpool 68 miles from Vyrnwy, the r of Glasgow 34 miles from Loch Katrina. nd surface waters are soft, and may be acid g to their contact with peat.

3) *Streams and rivers* provide pure water on hills r their source. The water from springs may be ntaminated by sewage and by passing through ltivated lands. A certain amount of purification kes place by oxidation and by sedimentation.

(4) *Wells and springs*.—When rain falls part of it s into the ground until it meets an impervious um; it is then held up and forms underground r which tends to move towards the lowest point. level of the underground water varies, being st in March and lowest in October. In order to n water from this source wells are bored which be shallow, deep, or Artesian wells. *Shallow* are sunk into the superficial porous beds of and so forth, overlying an impermeable layer of or rock. They are liable to surface pollution leaky drains or cesspools. In order to protect l from pollution it should be lined with some rvious substance for 20 ft. The coping should fficient, the area around should slope to a radius ft vell should have a cover and be provided nd in regard to the flow of underground water, the well should be above and not less than 100 ft. from any cesspool. *Deep wells* are those which penetrate the first impervious stratum. The water-supply usually comes from some distance, and is generally hard, owing to the mineral salts dissolved. *Artesian wells* are those where the underground water is at a higher level than the point at which the well is sunk. On penetrating the impervious stratum, the water rushes out and a small fountain is the result.

HARD WATER

Temporary hardness which is caused by the carbonates of magnesium and calcium can be treated by the addition of lime or by boiling. Permanent hardness due to the sulphates and chlorides of calcium and magnesium is best dealt with by the permutit process. Permutit is a zeolite sand, a silicate of aluminium and sodium (2 SiO_2—Al_2O_3—Na_2O—6 H_2O). In this process the water gives up its calcium and magnesium, receiving sodium in exchange. The permutit is regenerated by the addition of a solution of common salt, and is then cleansed by flushing with water.

BACTERIAL DISEASES DUE TO IMPURE WATER

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ephemeral fly known as drosophila and enabled biologists to ascertain in days or weeks what had previously taken them months or years, and thus to speed up the progress of cytology so that the theory and practice of chromosomes is now the vade-mecum of every biological student. Prof. Morgan is a foreign member of the Royal Society, which awarded him its Darwin medal in 1924. He has presided over the American Association for the Advancement of Science and is still in the prime of life, having been born in 1866. The award enhances the admirable foresight of the eminent Swedish engineer who left the greater part of his fortune to found prizes of merit. The second award of the prize in medicine or physiology was made in 1902 to Sir Ronald Ross, and since then awards have been made to A. V. Hill, F. G. Banting, and J. J. R. Macleod, Sir Gowland Hopkins, Sir Charles Sherrington and E. D. Adrian. The prizes are awarded by the Caroline Medico-Chirurgical Institute in Stockholm, and it is interesting to note how they have been distributed over the world during these 30 years. Nine have gone in all to the English-speaking races, six to Germany, three each to France and Denmark, two each to Holland and Austria, and one each to Sweden, Italy, Switzerland, Spain, Belgium, Russia and Tunis. No one has questioned the awards, and in these days of enhanced nationalism it is well that from a quarter such as this should come an impartial recognition of merit in medicine or physiology free from bias of race or nationality. Such an even may indeed come to be as surprising to future generations as the fact that the greatest peace prize in the world comes from the fortune of the inventor of dynamite seems to our own.

A DEFENCE TRUST

THE position of the National Insurance Defence Trust is not very satisfactory. It arose from the feeling that it was desirable to have a fund, contributed by all medical practitioners working the Act, which could be used for fighting purposes. The panel conference of 1926 decided that there should be no relaxation of effort until £250,000 had been subscribed, although why that sum was fixed no one seems to know; were it necessary, for example, at any time to cease work under the Act, it would evidently be insufficient for compensating those who lost financially through so doing. Such a strike is, however, now so unlikely that something might be done with the interest to benefit insurance practice. The trustees have in the past distinguished between subscriptions to the fund which go towards capital and the interest which accrues from investment. Some of this interest is used to cover the expenses of delegates to the annual conferences, and part expenses of the Insurance Acts Committee and its subcommittees. Honoraria are also paid to members of the central advisory committee. For example, Dr. X goes to Bristol to take part in oral representations with an official of the Ministry of Health in a case where Dr. P has been found guilty of a breach of the terms of service by the local medical service subcommittee. Dr. P has been advised that in consequence a sum of (say) £20 will be withheld from his quarterly cheque, and he desires to point out the iniquity of such a decision to the Ministry. Dr. X attends this oral representation, and assists Dr. P in argument against the deduction, and receives (probably) 5 guineas and expenses. But payments such as these do not use up the whole interest, and last year over £7000 was added to the capital for investment. At the 1932 panel conference an attempt was made to secure payment from the fund to men who gave lectures to final year students. This was not agreed to, as it was thought that medical schools should pay such lecture fees, but that conference did agree to make grants from the fund to elderly or infirm doctors who retired from practice in the interests of the service as a whole. The suggestion made by Lancashire at this year's conference (see p. 996) to extend the practice to chronic invalids who were badly off was, after interesting debate, turned down.

These payments out of trust funds are, we believe, imperfectly realised by the bulk of the subscribers, many of whom are under the impression that the interest all goes to swell the capital. Yet there is no question that the defrayal of the heavy expenses of the I.A.C. and the panel conferences comes within the statutory definition of the objects of the trust. Many insurance doctors did not subscribe in the first instance, some did and have given up, while in certain areas keen secretaries have completed the local quota. There are even some panel committees, still generously treated by the conference, which have never subscribed at all. In his statement at last week's conference the treasurer of the trust remarked one Scottish burgh had lost its reputation by subscribing 115 per cent. of its quota. Perhaps, he said, they recognise good insurance in the fund.

AFTERMATH OF DROUGHT

ALTHOUGH it is admitted that the water-supplies of many, perhaps most, of our villages and of several of our towns are far from satisfactory, yet under ordinary circumstances nothing happens, the morbidity-rates remain low and, in spite of the Cassandra-like utterances of medical officers and other sanitary experts, all seems well. We are now at the end of an extraordinary summer in which water has failed, entirely or partially, in some places, and in others it must be supposed that the supply has been kept up by a circulatory system in which deficiencies have been made up by in-leakages of more or less filtered sewage. The autumn has begun with rather an unusual number of reports of outbreaks of typhoid, paratyphoid, and less serious intestinal disturbances. A considerable outbreak of typhoid at Berrywood Mental Hospital, near Northampton, does not appear to be due to the water of that town, which the medical officer assures us is above suspicion, as is also that of the private supply to the institution, which has for the last 18 months been chlorinated. The recurrence of paratyphoid at Epping may be due to milk rather than water, but the persistence for a long period after the last outbreak of organisms in the water of the Chobbins brook, observed by Houston, shows how sewage from a place so affected may be a menace to the water-supply of a district where watch is not kept. The prevalence of gastro-enteritis at Kidderminster is admittedly due to contaminated water, as the local authorities have advised inhabitants to boil their water, and are hastening to instal chlorinating plant. They realise that time must be allowed for the effect of the chlorine to be fully transmitted through a probably
infected pipe system, and ultimately to yield
water. West Wylam, a Tyne village of 2500
tants, has had a small outbreak of typhoid of
origin and, so far, confined to one family.
not been mentioned in n with
either as a possible as c
cause, but it would t to
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THE PREVENTIVE ASPECTS OF MEDICINE

Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

7.—WATER-SUPPLY IN RELATION TO DISEASE

ROM the earliest times it has been recognised that ample supply of pure water is essential to any ommunity, and the great aqueducts that brought ater to ancient Rome are familiar to all. During his century Sir Arthur Evans has discovered in the alace of Knossos, built 4000 years ago in Crete, a ine of terra-cotta pipes laid at the side of a paved road. These pipes led from the hills, from which an aqueduct still supplies Candia. Each pipe is 2½ ft. long, with a diameter of 6 in. at the broad end and 4 in. at the narrow end. Ridges and raised collars are provided at the ends of the pipes, which give an extra hold over the cement binding the two pipes together.

All water comes from rain or snow, and when it falls part is evaporated, the amount varying with the temperature, a second part flows off in the direction of the incline of the surface, and a third part sinks into the soil. The latter forms the subterranean sources of water whose natural outlets are springs and whose artificial outlets are wells. The sources of water-supply are :—

(1) *Rain water*, which may be collected from roofs or from prepared surfaces, a well-known example being the eastern face of the Rock of Gibraltar. The rainfall in England varies from 20 in. on the east coast to more than 100 in. per annum on the coast of Cumberland, 1 in. of rain being equal to 101 tons of water per acre. If rain water is used for drinking purposes the first washings of the roof should be rejected, as it will contain impurities. Rain water is very soft and should be stored in an underground cistern which should not be made of lead.

(2) *Upland surface water.*—Rain falling on mountains and moors runs off in streams and may form lakes. In order to facilitate the water-supply streams may be impounded by building a dam across a valley. Reservoirs thus made may be a great distance from the towns they supply. The water of Manchester is brought 90 miles from Thirlmere, the water of Liverpool 68 miles from Vyrnwy, the water of Glasgow 34 miles from Loch Katrina. Upland surface waters are soft, and may be acid owing to their contact with peat.

(3) *Streams and rivers* provide pure water on hills near their source. The water from springs may be contaminated by sewage and by passing through cultivated lands. A certain amount of purification takes place by oxidation and by sedimentation.

(4) *Wells and springs.*—When rain falls part of it sinks into the ground until it meets an impervious stratum ; it is then held up and forms underground water which tends to move towards the lowest point. The level of the underground water varies, being highest in March and lowest in October. In order to obtain water from this source wells are bored which may be shallow, deep, or Artesian wells. *Shallow wells* are sunk into the superficial porous beds of sand and so forth, overlying an impermeable layer of clay or rock. They are liable to surface pollution from leaky drains or cesspools. In order to protect a well from pollution it should be lined with some impervious substance for 20 ft. The coping should be sufficient, the area around should slope to a radius of 6 ft., the well should have a cover and be provided with a pump, and in regard to the flow of underground water, the well should be above and not less than 100 ft. from any cesspool. *Deep wells* are those which penetrate the first impervious stratum. The water-supply usually comes from some distance, and is generally hard, owing to the mineral salts dissolved. *Artesian wells* are those where the underground water is at a higher level than the point at which the well is sunk. On penetrating the impervious stratum, the water rushes out and a small fountain is the result.

HARD WATER

Temporary hardness which is caused by the carbonates of magnesium and calcium can be treated by the addition of lime or by boiling. Permanent hardness due to the sulphates and chlorides of calcium and magnesium is best dealt with by the permutit process. Permutit is a zeolite sand, a silicate of aluminium and sodium ($2\ SiO_2—Al_2O_3—Na_2O—6\ H_2O$). In this process the water gives up its calcium and magnesium, receiving sodium in exchange. The permutit is regenerated by the addition of a solution of common salt, and is then cleansed by flushing with water.

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CHOLERA

This disease is endemic in India, and in the past epidemics have occurred in England, London having suffered severely. There were four epidemics between 1832 and 1866, the number of deaths varying from 14,000 in 1849 to 5000 in 1832. It is interesting to note that the severity of the 1849 epidemic varied with the impurity of the water-supply. In the districts which derived their water from the Thames above Battersea there were only 15 deaths per 10,000, whilst in the districts which derived their water from the river between Battersea and Waterloo Bridges there were 123 deaths per 10,000. It may be noted that at that time the London sewage was discharged directly into the river. Since 1866 there has been no epidemic of cholera in London.

The value of sand filtration was well shown in the epidemic which occurred in Hamburg in 1892 and Altona in 1893. The water-supply at Hamburg was unfiltered and derived from the tidal Elbe at a point where the river was little contaminated. Altona's water-supply was derived from the Elbe below Hamburg after the river had received the sewage of 800,000 people, but careful sand filtration was practised. In 1892 there were 17,000 cases and 8600 deaths in Hamburg, whilst Altona remained free. Early in 1893, however, a number of cases occurred in Altona, and it was found that one of the sand filters had been incapacitated owing to freezing of the surface layers of the sand during the process of cleansing.

LEAD POISONING CAUSED BY WATER-SUPPLY

In 1885 the medical practitioners in Sheffield found that certain of their patients were suffering from lead poisoning, and this condition could not be traced to the trade in which they were engaged. The circumstances were reported to the medical officer of health, Dr. Sinclair White, who immediately took steps to ascertain the cause. The water-supply of the houses where these patients lived was analysed, and in every case sufficient lead was found in the water to account for toxic symptoms. The symptoms of chronic lead poisoning were typical. It will be remembered that these are lack of energy; pallor; loss of appetite; a blue line at the junction of the gum and teeth; constipation; colic; headache; pains in the joints; tremor of the tongue and of the lips; drop wrist due to paralysis of the extensor muscles of the forearm; and, finally, changes in the kidney and the brain which may lead to fatal result.

Dr. Sinclair White set himself to answer the following questions: (1) Where does the lead in the water come from? (2) Is the contamination general? (3) What amount of lead is found in the water, and what influences the amount? (4) What remedy can be suggested?

(1) *Where does the lead come from?* This question was answered by analysing the water from the street pipes, which were made of iron. The samples so obtained were free from lead. On the other hand, the water taken from taps in the houses was found to contain lead.

(2) *Is the contamination general?* The answer to this question is, No. Sheffield was supplied at that time by two reservoirs: (*a*) the high level, known as the Redmires Reservoir; (*b*) the low level, known as the Strines Reservoir. It was found that the water from the Redmires Reservoir dissolved lead, whilst that from the Strines did not. Analysis showed also that the taking up of lead was not connected with any sewage pollution.

The following facts indicated the difference between the two reservoirs. In both cases the source of the water was from the surface of moorland, but in the case of Redmires the surface peat was abundant, and the shale underneath the peat contained iron pyrites (FeS_2). An important point in the Redmires water was also the fact that it had a definite acid reaction, the reaction being more marked in samples taken high up on the moor, the figure varying from 0·7 to 0·2 grain of acid per gallon. On the other hand, at the Strines Reservoir the depth of the peat was much less and the pyrites was present in a much smaller quantity. In the catchment area there was less stagnant water, and it was found that it was not acid to litmus. Another fact noted was that the Strines water, on passing down from the reservoir to the town, flowed through a conduit built of brick and mortar. There is no doubt that the water on passing over mortar would gain in alkalinity.

Three suggestions were made as to the cause of the acidity in the Redmires water:—

(*a*) Iron pyrites in the presence of air and damp produce hydrate of iron and sulphuric acid. In the presence of lead, white lead sulphate would be formed, a salt capable of being dissolved in water up to grs. 3 per gallon, a poisonous quantity.

(*b*) The decomposition of vegetable matter such as peat gives rise to ulmic and humic acids. It will be remembered that the amount of peat was much greater at Redmires than at Strines, and the amount of organic matter was also found to be greater in the Redmires water than in the Strines water.

(*c*) The air of Sheffield being often charged with smoke contains SO_2. In the presence of damp, H_2SO_4 will be formed, and might add to the acidity of the water in the reservoirs, but this suggested cause would have operated equally in the case of the Strines reservoir.

(3) *The amount of lead in the water* from the Redmires source was found to vary with the time of day at which the samples were taken. If taken first thing in the morning, after the water had been standing for hours in contact with the lead pipe, and compared with samples taken during the afternoon, it was found that the quantity of lead in the morning varied from gr. 0·7 to 0·43 per gallon, whilst the afternoon samples varied from gr. 0·49 per gallon to none. It was also found that hot water took up more lead than cold water. Experiments were also carried out in order to estimate the effect of pressure in the pipes. Water exposed for four hours at a pressure of 140 lb. to the square inch took up gr. 0·28 per gallon, whilst with no pressure only gr. 0·14 per gallon was absorbed. In 14 hours the amount of lead taken up was greater, and this also applied to the water standing in a new lead pipe, the conclusion being that pressure acts (1) by intensifying the action on the lead, and (2) by dilating the pipe, which disturbs the protective lining, and, by making longitudinal cracks, exposes a new surface of lead to the water. Experts were agreed that gr. 0·1 per gallon is dangerous. It was found that symptoms in this district varied (*a*) with the quantity of water drunk, (*b*) with the use or otherwise of filters, for in this way lead in water is partially or completely removed. When water was used in making tea and coffee the lead was precipitated, and therefore the danger diminished. It was found that long pipes, new pipes, and the use of lead cisterns increased the amount of lead found in the water.

Remedies.—Slate cisterns were recommended and the provision of iron pipes discussed. The great disadvantage of this type of pipe is the fact that it cannot be bent, and that many joints are expensive and inconvenient to lay in a house, so that the treatment of the water when it leaves the reservoir was advocated. It was suggested that by passing the water through a container charged with lumps of limestone the acidity would be removed, and would be thus unable to take up lead when it entered the lead pipes in the houses. Since then it has been found more convenient to add chalk to the water, and this process is carried out up to the present time with complete success.

WORMS

Many species of parasitic worms may be transmitted by water. Certain worms in this country may invade man through the water-supply, and an epidemic of infection with *Ascaris lumbricoides* occurred in 1923 in a small village in Hertfordshire with a population of 60 people. Apparently everyone suffered from these parasites, and the water-supply of the village, derived from a well which was in a defective condition, was suspected. The epidemic was a serious one, as more than one death occurred among children.

In Africa bilharziasis is due to a worm, the adults living in the abdominal veins of man. The eggs appear in the urine and fæces, reach water, and enter minute snails penetrating their antennæ. Tadpole-like cercariæ develop, enter the water again and pierce the skin or mucous membrane of man, thus entering the blood stream again. The symptoms produced are blood in the urine, anæmia, and ulceration of the intestine.

Protection may be obtained by filtration or boiling for drinking purposes, whilst liquor cresol in the proportion of 1 in 10,000 renders the water safe for bathing.

THE LONDON WATER-SUPPLY

The London water is derived from river sources and deep wells. The usual quantity of water considered essential is 30 gallons per head per day. In London 37 gallons is provided. This quantity includes what is necessary for drinking, cooking, washing, sanitation, public baths, cleansing of streets, the putting out of fires, and also what is necessary for trade purposes. In London 58 per cent. of the water is taken from the Thames, 25 per cent. from the Lee, and 17 per cent. from the deep wells, the length of the London water mains being 6970 miles. In this connexion it is of interest to note that the longest river in the world, the Amazon, is only 4000 miles. Other features in the London supply include 49 storage reservoirs, 92 service reservoirs, 178 filter beds with an average of one acre each. The processes in operation at the new Walton works near Hampton Court are as follows :—

> Water is taken in from the Thames and is passed to the storage reservoirs, one of which holds 718 million gallons. From this it goes through primary rapid sand filters, and afterwards is submitted to slow sand filtration. From these secondary filters it passes to a depôt where ammonium sulphate is added, and then it is chlorinated, the proportion being 0·2 part of chlorine per million. The water is then transmitted to the service reservoirs, where it awaits distribution to the houses.

The safety of the London water is ensured by taking a large number of routine samples for analysis, the figures for 1932 being :—

Chemical tests	4,677
Bacteriological samples tests	12,934
Total	17,611

The average daily consumption of water in London during 1932 was 281 million gallons, whilst the number of cases of enteric fever notified in 1932 was as low as 195, a very favourable figure when one considers that in 1900 it was 4292.

WATER-SUPPLY IN WAR

The battle of Messines was fought on June 7th, 1917, and Earl Haig pointed out in his despatch how important the problem of water-supply was in that battle. The development of the water-supply was carried out steadily through the winter of 1916 and the spring of 1917. In addition to the 8,000,000 gallons stored at Dickebusch and Zillabeke Lakes, 10 clay reservoirs were constructed along the Kemmel-Mont Rouge range of hills which ran east and west through the centre of the area, 180 miles of piping were laid, and pumping stations built which were capable of supplying 1,000,000 gallons of treated drinking water for the men and 500,000 gallons of untreated water for the horses per day.

In describing the battle Earl Haig states that pipe lines were taken well forward from the existing lakes, the Kemmel reservoirs, and the sterilising barges on the Lys. In addition to the piping, arrangements were made for the transport of water rations and stores by pack animals and carrying parties. So efficiently did these arrangements work out that during the attack water reached the troops within 20–40 minutes of the taking of new positions, and in one case parties arrived with packs, and dumps were formed within four minutes of the capture of the objective. The magnitude of the operations can be seen from the fact that 67 guns and 7200 prisoners were taken during the battle. The report on the work of the Royal Engineers in the war, pointing out that an adequate supply of water is of paramount importance in every phase of warfare, states : "Men can fight and continue to fight with shortage of ammunition, men and animals can subsist on a minimum quantity of food, but both will break down in a few hours and lose spirit, condition and power of resistance unless water is obtainable in sufficient quantities and of necessary purity. The purity of the water-supply in the war was ensured, when time allowed, by sedimentation and filtration through sand, followed by chlorination and removal of the excess of chlorine" (Official History of the War).

PURIFICATION OF WATER ON A SMALL SCALE

The usual methods are as follows : (*a*) *distillation*, (*b*) *boiling*, (*c*) *the addition of chemicals*. Half a teaspoonful of fresh bleaching powder is shaken up with a pint of water, and it is found that one teaspoonful of this solution will sterilise ten gallons of water in half an hour. (*d*) *Domestic filters*. The old-fashioned types of filter contained sponges, charcoal, sand, or spongy iron. They were useful when new in clarifying water and removing visible pollution, but they soon became foul, and as they were difficult to clean they became an actual danger by increasing the bacterial content. The modern filters are of the "porcelain-candle" type. In this category are the Berkefeld and Pasteur-Chamberland filters. These are slow but germ-proof, and should be cleaned every three days by the application of boiling water, by scrubbing, and occasionally by dry heat.

SWIMMING BATHS

Swimming is one of the best forms of exercise. It brings every muscle into action, inculcates cleanliness and self-respect, and, in addition, is valuable in life-saving. The water must of be high quality, free from pollution and harmful bacteria. Pollution may be due to :—

1. *Sources not derived from the persons of bathers.*—(*a*) The water may be already polluted at the intake. In 1908 Dr. R. J. Reece investigated 22 cases of typhoid at Walmer. The infection was traced to a sea-water swimming bath, where the intake pipe was 100 yards and 500 yards respectively from two outfall sewers. The water on filling the bath had the appearance of storm water in a London street after heavy rain. (*b*) The pool may be contaminated from surface drainage, fallen leaves, dead animals, and water birds. Green growths are, however, beneficial as they purify the water by oxygenation, and it has been found that in the L.C.C. ponds there was as much as 192 per cent. dissolved oxygen. The disadvantage of algæ in indoor baths is that they die and then have an offensive smell, and they also make the sides and steps slippery. They can be controlled by the addition of chloride of lime or copper sulphate.

(*c*) In addition to soot and dust which may be blown into the bath, the water may be contaminated by the boots of bathers or spectators. In order to avoid this, dressing boxes should open directly on to the bath and a door be provided on the side of the box away from the bath. Bathing costumes may be a source of pollution. 150,000 up to 1,000,000 bacteria per square inch have been found in them, whilst after proper washing with soap and afterwards rinsing the number has been diminished to 500 bacteria per square inch. Finally, towels may be a source of infection unless properly washed.

2. *Pollution derived from the persons of bathers*, i.e., from hair, cells from the skin, and from the mucous membrane, mucus, saliva, and urine.

3. *Bacterial pollution.*—The following organisms have been found in swimming bath water, *B. subtilis*, *B. prodigiosus*, *B. coli*, and, on one occasion, the *Streptococcus hæmolyticus*.

There is no doubt that *occasionally, though infrequently*, diseases are transmitted through infection by the water of swimming baths. As mentioned above typhoid fever may be spread in grossly polluted baths, but only two epidemics have been recorded. Conjunctivitis has been noted and also sinusitis, otitis, which is probably due to pressure of the water on the middle ear, and skin diseases such as ringworm, scabies, and pediculosis.

Methods of purification.—Formerly emptying and refilling the bath daily was recommended, but this was very expensive with regard to fuel and water, and has subsequently been found less efficient than the modern method of continuous filtration and chlorination, which must be in the charge of an intelligent man. The whole of the water in the bath should be passed through sand filters once every four hours, whilst the amount of chlorine added varies from 0·2 to 0·5 part per 1,000,000. Recently sterilisation by exposure of the water (after filtration) to ultra-violet rays is being tried. Hot and cold shower and foot baths should be provided, soap should be used, and easily accessible lavatory accommodation should be provided for both sexes.

CONCLUSION

It will be seen that in order to secure a pure water-supply effective supervision must be exercised. This includes (*a*) periodic survey of sources, gathering grounds, and catchment areas; (*b*) inspection of filtration, storage, distribution, and the conditions of cisterns in the house; and (*c*) periodic bacteriological and chemical examination. General practitioners are the first line of defence, and we depend on them for prompt notification in order to secure the earliest possible intimation that an epidemic is in being. Their influence is also a very valuable asset in the education of local councillors and of the public.

RALPH P. WILLIAMS, M.D., D.P.H.
Medical Officer, Board of Education; Lecturer on Hygiene, King's College Hospital; formerly Professor of Public Health, University of Sheffield

POST-GRADUATE LECTURES

FOR the fourth week in succession we publish summaries of lectures delivered to post-graduates at the courses lately held or now in progress at London teaching hospitals. Dr. Pearson spoke at University College Hospital, Dr. Warner at Charing Cross, and Dr. Hunter at the London.

THE PREMATURE CHILD

(DR. W. J. PEARSON)

THE chief practical considerations which arise for the doctor in the case of the premature infant are (1) its management, (2) the feeding, and (3) the immediate and remote prognosis. All these questions demand some knowledge of the handicaps that accompany prematurity, and these must be constantly kept in mind.

To appreciate how unfortunate the accident of being premature may be, one must first realise the difficulties with which even the full-term have to contend on emerging from the protected uterine life. He has at somewhat short notice to obtain and digest his special food, to absorb oxygen by independent respiratory efforts, to maintain a reasonably even temperature, and to assume powers of excretion, in addition to protecting himself from various physical and chemical injuries, including the germs of infection.

The premature infant is handicapped at the start in several ways. The heat regulation, for more than one reason, is one of the most unstable functions, the body temperature showing marked fluctuations with a tendency to a low temperature. Respiration is impaired, for the respiratory muscles are weak and the chest is not properly expanded, which leads to atelectasis of the lung; as a result the blood is poorly oxygenated and there may be attacks of cyanosis, during which respiration may cease entirely; and in all cases it is superficial and irregular. As regards the digestive tract, suction is often weak, the appetite poor, and there is often great difficulty in getting these immature children to digest enough food to put on weight. The circulation is feeble and the blood-vessels so delicate that hæmorrhages readily occur, and it is apt to be a serious matter if the cerebral vessels are damaged at birth. Physical activity is at a minimum—partly because of the feeble condition of the muscles and circulation, but partly also because the nervous system is inadequately developed—so that the child tends to lie in a torpid state.

In the early stages, then, the chief dangers lie in the tendency to intracranial hæmorrhage, cyanosis, feeble respiration, and poor circulation, subnormal temperature with low vitality, and also in a somewhat unusually intense physiological jaundice. One must remember, too, how easily these small infants contract infection (pneumonia especially) and suffer from digestive upset, diarrhœa, and vomiting. The first diarrhœa of a premature infant should always be considered a dangerous symptom and treated accordingly.

From this it will be obvious how important are the prevention of infection, the ventilation of the room in which the child is, as well as the heating arrangements and careful handling and protection from noise and other forms of excessive nervous stimulation. Most prematures seem to do best when the body temperature is about 99·2° F.; it should not be allowed to go below 98° F. or above 100° F.

Premature infants lose relatively more weight in the early days and regain the birth weight more slowly than does the full-term child; in the latter the correction is made by the tenth to fourteenth day; in the former one is usually satisfied if this is accomplished in 21 days.

In most cases the early handicaps of prematurity are overcome and the children make good progress. Some are normal by the end of the first year; as a rule a normal standard in growth, weight, and mental development is attained in the second to third year; some, however, develop rickets and anæmia and may bear the stamp of prematurity for years, this being shown in their delicate appearance and in a tendency to attacks of sickness and to nervousness.

In the details of management, though the main responsibility is taken by the nurse, intelligent supervision by the doctor is essential. [Here a film showing methods of feeding—by breast, by pipette, by Breck-feeder, by bottle, and by gavage or tube-feeding—was exhibited.] I would like to emphasise the importance of gauging the caloric requirements, of working up to these requirements slowly in most cases, of deciding from day to day the strength and amounts of feeds and the intervals of feeding, and if the child is on the breast, of making sure by test-feeds that underfeeding does not occur. The following is the kind of régime to be adopted in most cases:—

First 12 hours: Five per cent. glucose solution (½ to 1 oz.) to prevent much initial loss of weight from dehydration.

Second 12 hours: One to three feeds of breast milk.

After the first day: The baby should be placed to the breast for two or three minutes, three-hourly; extra water must be given between feeds.

In the smallest babies who are unable to suck ¼ to ½ oz. of breast milk and water, equal parts, can be given at first, increasing gradually one drachm at a time, until at the end of one or two weeks a 3 lb. infant will be getting three-hourly feeds of 1 to 1½ oz. of breast milk, the water being gradually reduced as the milk is increased, so that when one-sixth of the body-weight is given in food, very little extra water is necessary.

Feeding at intervals of three hours by day and two hours by night is our usual practice, but I think really that three-hourly feeds over the whole 24 hours is usually just as successful. If vomiting or loose stools occur it is better to feed less often—i.e., four-hourly—for a time. The amount given at a feed, of course, will depend on the age, weight, and feeding intervals, but it must be remembered that the caloric requirements of a small infant are high. It is estimated from 60 to 100 calories per lb. body-weight, which in terms of breast milk will mean about 2½ to 3½ oz. per lb. body-weight, but it is often weeks before the full requirements can be met. If breast milk is not available, choice can be made from sweetened condensed milk, a 1 per cent. fat and 1 per cent. casein dried milk, peptonised milk and water. In some other countries, notably America, many physicians regard protein milk as the most satisfactory. It has been little used, however, in this country, and the nearest approach to protein milk would be an acidified dried milk—half-cream or humanised.

RHEUMATIC DISEASE IN ADULTS

(DR. E. C. WARNER)

RHEUMATIC disease in adults is usually due to fibrositis or arthritis.

Fibrositis is often due to obscure causes, but chill is one of the most important. This was clearly shown in the case of metal workers by Glover, who found that those doing short spells of strenuous work, with free perspiration, and then stood about for periods of rest, often in draughts, were particularly liable. Infection from a septic focus is an aggravating factor, but its importance has been over-estimated in the past. Endocrine deficiencies, especially of the thyroid and posterior pituitary, may be important, particularly in later life, while general debilitating conditions, such as anæmia and fatigue states, should not be overlooked. The commonest examples occur either in the muscles themselves, around joints (often mistaken for arthritis), in connexion with nerves (neuro-fibrositis), or in the subcutaneous tissues (panniculitis). Common examples of these conditions are in lumbago, where the fibrous tissues of the muscles of the back, and often also the peri-articular spinal structures, are involved; in the occipital and suboccipital region, often labelled as headache on this account, and particularly when there is also a neuro-fibrositis of the great occipital nerve, causing the pain to spread to the vertex. We often find a capsulitis of the shoulder-joint labelled as an arthritis of the joint. Arthritis of the shoulder is a rare condition, and we should always think of a capsulitis when radiography of the joint shows little or no bony change, and yet there is pain and limitation of movement in all directions. The commonest example of panniculitis is across the shoulder regions, usually in obese subjects. The main points aiding diagnosis of fibrositis in the acute stages are pain on movement, often with local tenderness, aggravated when the structure is on the stretch (of great importance in diagnosing fibrositis of the abdominal wall from intra-abdominal disorders); and in the chronic stages tender nodules are often palpable.

The treatment of the acute stages of fibrositis resolves itself into relieving pain with rest aided by aspirin, perhaps with the addition of phenacetin or antipyrin (in doses of grs. 2 to each grs. 10 of aspirin), or even with codeine. Radiant heat, the infra-red rays, or the hot-water bottle, followed by light massage may be of real benefit, and sometimes counter-irritation is used. A dose of calomel is a wise addition. In the chronic stages, or else after the acute stage has passed, septic foci must be dealt with, the diet should be regulated, particularly avoiding large quantities of sugar, and adhesions may have to be broken down by manipulation.

Sciatica is one of the commonest forms of neuro-fibrositis. Often two types can be distinguished: that in which the parenchyma of the nerve is largely involved, with much muscular wasting and the loss of the ankle reflex; and the perineuritic form, where there is tenderness and pain along the course of the nerve, with pain on stretching, but with little muscular wasting and only slight diminution in the ankle reflex. This latter form often dates from a strain or other trauma. The treatment in the acute stages resolves itself into rest in bed, with the leg supported by sandbags and kept in position by a roller towel, or the use of the long Liston splint (usually resented by patients), or, in severe and intractable cases, by having a plaster cast made for the patient to lie in. Again the best drugs are aspirin, phenacetin, or antipyrin, and even codeine or tinct. opii. Dry heat in the form of radiant heat or infra-red rays, or antiphlogistine or moist heat with a linseed poultice, are greatly appreciated, as is light massage to relieve pain. In the subacute stages and in persistent cases the intraneural injections of saline, 1 per cent. novocain, or of oxygen, not only stretch adhesions but excite a mild temporary inflammatory reaction. Once the local tenderness along the nerve has gone, the inflammatory stage has passed, and gentle manipulations and exercises must be carried out. The persistence of pain on walking or on stretching the nerve is no criterion of active inflammation, but is equally present with neuritic and perineuritic adhesions. No manipulations should ever be carried out without a preliminary X ray examination, which may reveal, for example, unsuspected secondary deposits; and once the manipulation has been done, within 24 hours active exercises to maintain the good result must be undertaken even at the expense of some pain on the part of the patient.

Chronic arthritic cases fall usually into one of six groups: infective, rheumatoid, osteo-arthritic, climacteric, gouty or neuropathic. Only the first four will be considered. Infective arthritis can occur in either sex and at any age in adults, and is usually due to a streptococcus (often the *viridans* group) or a gonococcus. The patient usually shows none of the prodromal or accompanying constitutional signs and symptoms met with in rheumatoid arthritis, such as loss of weight, anæmia, anorexia, &c., but may show some pyrexia. The joints involved are usually one or more of the larger joints (particularly with the streptococcus), such as the knees, ankles, elbows, or wrists, and symmetrical involvement of the smaller joints of the fingers is very rare. The joints contain fluid in the acute stages. Once the infective focus (usually in the teeth) has been dealt with, the joints rapidly recover, although if the foci are multiple a short course of autogenous vaccine is preferable to prevent evoking a severe reaction with wholesale extraction.

Rheumatoid arthritis is largely confined to women, between 20 and 45 years of age, and the worst cases are usually seen in the earlier period. Constitutional symptoms are almost invariable—pallor and secondary anæmia, anorexia, loss of weight, and tachycardia out of proportion to the temperature. The tachycardia is due to a raised basal metabolic rate in the acute cases, and in my series ranged from +15 to +20 per cent. In rheumatoid arthritis there is often a family tendency, and although septic foci may aggravate the condition, we are dealing with a disease which is primary metabolic in origin. The routine extraction of all teeth, whether they are normal or not, is not now countenanced or practised. The joints most typically involved are the smaller joints of the fingers and hands, often in a symmetrical manner, although the knees, ankles, elbows, wrists, and indeed almost any joint may be affected. In the early stages the main change is a peri-articular thickening, and the amount of fluid in the joints is much less than in the infective form. Treatment is first of the constitutional condition, and secondly of the joints. The first is often overlooked, but in my opinion is the more important. As Howitt pointed out, a diet of 20 calories per lb. of the normal body-weight per day should be prescribed, with an adequate amount of protein and plenty of animal fat. To overcome the diminished sugar tolerance, and to stimulate the appetite and recovery of weight, insulin in 5, 10, or 12 unit doses before the two chief meals is desirable in the worst cases; and as with hyperthyroid cases in general, nursing out of doors in a tent or chalet, which also stimulates the functions of the skin, is of real value. The anæmia may need treating with iron or even with blood transfusion. In the acute stages to prevent subluxation (due to the soft peri-articular structures, particularly of the knees and wrists) the joints need splinting at least for part of the day; and daily passive movement and massage will help to prevent adhesions forming. Later gentle manipulation may be desirable to increase the mobility of the joints, but forcible movement must not be practised, if only on account of the decalcification of the bones making fracture an easy matter.

In osteo-arthritis the main ætiological factors are a senile degeneration, with long-continued strain or trauma, and in some cases an aggravating septic focus. In many cases obesity is associated with the joint condition, and the relief of a stone or two of weight-bearing may make an enormous difference to the joint. To help this, thyroid may be given, and iodine by mouth is often of value. The local treatment consists in relieving strain (which is often due to flat-feet when the knees are involved), and adequate support with a crêpe bandage or an elastoplast bandage. Massage may increase the stability of the joint by toning up the muscles, and may help to relieve pain. Particularly in the lumbar spine we meet with osteo-arthritis. This is often a radiological change, and has been shown to be present in about 70 per cent. of people over the age of 50. In most of these cases some peri-arthritis of the invertebral joints is the real cause of the pain, and may even spread to the nerves in the intervertebral foramina, causing radiating pains in the trunk. Here manipulation after careful X ray examination may occasion remarkable improvement. Deep X rays may relieve pain in osteo-arthritis of the hips and spine, but they are very exhausting for elderly patients.

Climacteric arthritis in women of 40–55 years usually occurs in the obese; and especially in the knees, where tenderness on the inner side of the joints is most marked. In the very acute stages rest may be necessary, but later suitable weight reduction with thyroid or Elityran (Bayer), or even Lugol's iodine; and local massage to the knees and quadriceps may have to be persisted in to complete the cure.

OBESITY

(DR. DONALD HUNTER)

IT has often been said that the victims of obesity have a slow mentality and are lethargic; also that there is a peculiar connexion between obesity and financial crime. These generalities have no sound basis; indeed, it is possible to think of many extremely active fat persons both among one's own friends and the figures of history or public life, for example, Napoleon, Gibbon, and Chesterton. The victims of obesity are nevertheless to be pitied for many reasons. They must of necessity suffer from a restriction of physical activity, they have a tendency to develop flat-feet and arthritis, they also have an unpleasant tendency to excessive sweating, and they are difficult to anæsthetise, operate on, and nurse. Moreover, they are predisposed to diabetes, bronchitis, and possibly to hyperpiesia.

In making a diagnosis it is essential to differentiate such forms of obesity as are associated with organic lesions from those in which no organic lesion can be found. This latter group includes the vast majority of the cases of obesity. Experiments have recently been made by some French workers on the production of obesity, genital atrophy, and hypersomnia in animals by damaging the hypothalamic region of the brain. The onset of obesity has been noted in certain patients with encephalitis lethargica in whom the inflammatory process has involved the hypothalamus.

There are various other conditions which are associated with obesity and which must be excluded before the case may be considered as one of simple obesity. Patients with adiposity of the Fröhlich type have a large pudding face; their increased fat deposit has a feminine distribution; they have broad hips, knock-knees, and delicate hands and feet, with tapering fingers and toes. A suprasellar cyst may present the syndrome of headache, progressive blindness, and adiposity. Eunuchism is associated with a moderate degree of obesity, as is suprarenal virilism. Cases of suprarenal tumour are commonest in children, and develop a marked sexual precocity of the male type, with excessive growth of hair fatness and great muscular development. The abnormal sexual development may disappear after removal of the growth, but unfortunately the tumours are extremely malignant, and the patient usually dies from secondary deposits in a short time. In the type of obesity associated with the name of Dercum there are localised painful areas of fat, atrophy of muscles with progressive weakness, and profound psychic disturbances.

As a rarity may be mentioned the type of case described by Cushing as pluriglandular disease, and associated either with a basophil adenoma of the pituitary body or with a carcinoma of the thymus (Leyton). In this disease the patient develops a fat florid face, obesity, and lilac striæ, especially over the abdomen. The obesity has a curious anterior distribution in the region of the breasts and abdomen. The gluteal region is wasted in comparison, and the limbs are long and thin.

Myxœdema presents a very characteristic clinical picture which once recognised is not easily forgotten. The patients are most commonly middle-aged women, who have gradually increased in weight; they have a slow mentality, an expressionless face with great puffiness under the eyes; their hair is scanty and dry, and the outer ends of the eyebrows are commonly absent. Their movements are slow, they feel the cold abnormally, they are anæmic, the pulse is slow, and the temperature subnormal.

The above conditions must be ruled out—it is highly likely that your patient will be suffering from uncomplicated obesity—in either case your next task is to master the patient's mind, and to convince him that all this fat went in by the mouth. The law of conservation of energy is applicable to the human body, fat or thin. Very many of these fat persons will swear that they are eating practically nothing. They are either lying or deceiving themselves. In advising them how to reduce their weight certain principles must be followed. Diet is of the greatest importance; exercise, massage, fluid restriction, and turkish baths are worthless. The patient must first be persuaded that his weight *can* be reduced by diet. There must be no departure from the diet nor any alteration in it. The diet must be inadequate in carbohydrate and fat but adequate in protein and vitamin content. It should contain at least one gramme of protein per kilogramme of body-weight. The ordinary activities of the patient should not be interfered with by the treatment, and thyroid should not be used except in myxœdema. The loss of weight to be aimed at should not exceed 2 lb. a week. In order to maintain body-weight a man of 75 kg. at complete rest needs about 1750 calories in 24 hours. If in active work he will need from 2500 to 5000 calories, depending on the nature of the work. Therefore a suitable reducing diet for a man who should weigh 75 kg. contains approximately 1100 calories, made up as follows:—

Protein	75	grammes	= 300	calories.
Carbohydrate ..	75	,,	= 300	,,
Fat	56	,,	= 504	,,
	Total ..		1104	,,

Such a diet, if adhered to, will inevitably produce a loss in body-weight.

At the end of Dr. Hunter's lecture Miss R. M. Simmonds, dietitian at the London Hospital, demonstrated by means of trays of food how the above diet prescription could be dispensed according to the individual taste of the patient and the length of his purse.

REDUCING DIET FOR PERSON OF 75 KG.

	CHO.	Pr.	Fat.
Breakfast			
Tea or coffee (milk 2½ oz.)	4	2	3
1 egg	..	6	5
1 oz. bacon (1 thin rasher)	..	5	15
Tomatoes, 4 oz. (2 good sized ones)	5	..	..
1 Vita-Weat biscuit	6	..	..
Butter, ¼ oz. (small pat)	..	..	6
Grapefruit, 3½ oz. (½ a fruit)	5	..	..
	20	13	29
Lunch			
Melon (4 oz.)	10	..	..
Lean meat (2 oz.)	..	20	4
Salad {Lettuce (1½ oz.) Tomato (2 oz.) Cucumber (2½ oz.)}	5	..	..
Jelly (¼ oz. gelatin)	..	5	..
1 biscuit	6	..	..
	21	25	4
Tea			
Tea (milk 2½ oz.)	4	2	3
1 biscuit	6	..	..
Butter (¼ oz.)	..	..	6
	10	2	9
Dinner			
Clear soup	..	..	..
Fish (3 oz.)	..	10	2
Chicken, meat, or rabbit (2 oz.)	..	20	4
Spinach (3 oz.)	3	..	..
Marrow (4 oz.)	5	..	..
Apple (3 oz.)	10	..	..
Cheese (½ oz.)	..	5	2
1 biscuit	6	..	..
Butter (¼ oz.)	..	..	6
	24	35	14
Total calories=1104.	75	75	56

Avoid sugar, cakes, pastries, puddings, jam, bread, motza (Jewish bread), potatoes, fried food, and rich sauces,

You may eat as much as you like of green vegetables, salad, and all fresh fruit except bananas.

She agreed that in mastering the mind of the obese it is important never to allow a patient to think that he is deceiving us successfully. It may be true that an obese woman eats less at regular meal times, but such persons owing to their obesity become ashamed to eat at meals, and their gain in weight comes from what they eat at the kitchen table or out of the cupboard. Articles so eaten include sugar, chocolates, biscuits, buns, and pastries. The cook and the chef are constantly tasting foods of high carbohydrate content, such as sauces, thick soups, and portions of pastry used for tarts and pie-crusts. Fat men cannot be accused of this kitchen cupboard method, except in the case of the pork butcher who all day long eats sausage meat stuffed with bread. The fat man eats too much carbohydrate at his meals, principally in the form of bread, potato, and puddings. When he takes too much beer this acts as a carbohydrate sparer and is therefore a factor in the production of obesity. Miss Simmonds concluded by quoting figures of cases of obesity treated in every department of out-patients. In five years she had dispensed diet prescriptions and followed up their use in 626 cases. It was found that 522 patients were consistently obedient and lost weight regularly, while 104 were disobedient or attended insufficiently. No patient treated had felt hungry or in any other way dissatisfied with the diet. The average losses of weight were 20 lb. in three months and 28 lb. in six months. It was often possible after some months to add carbohydrate to the diet without the occurrence of further gain in weight.

PANEL AND CONTRACT PRACTICE

ANNUAL PANEL CONFERENCE

Dr. H. C. Jonas (Barnstaple) presided at the annual conference of representatives of local medical and panel committees, held in the Great Hall of B.M.A. House on Oct. 19th.

National Insurance Defence Trust

Dr. H. G. Dain, as chairman of the trustees, outlined the work of the trust during the past year. The report, as he explained, shows that the trustees do not consider it necessary to define further the objects of the trust, which, broadly speaking, are to protect the interests of the medical profession in connexion with national health insurance. Last year the conference approved the policy of assisting aged and infirm practitioners against whom complaints had been made to retire from the service, and the trustees have considered and approved the first application under their new discretion.

Mr. N. Bishop Harman, treasurer of the trust, gave a good account of its finances. He said that out of 129 English regions 15 had exceeded their subscription quota, while in Scotland 8 had earned that distinction out of 54—a higher proportion. Aberdeen has actually subscribed 138 per cent., and the treasurer declared that he would believe no further stories he heard about the financial attitude of its citizens.

Dr. R. G. Chase (London) asked whether committees which made no contribution were able to claim the benefits of the fund, such as defence before the Medical Service Subcommittee and the expenses of sending a representative to the conference.—The chairman of the conference answered that it had been decided by previous conferences not to differentiate between districts which contributed and those which did not. Some committees which did not pay declined to profit from the fund.

Dr. J. H. Bletsoe (Essex) moved that the conference was opposed to "any further violation" of the objects of the trust, or any use of the funds for other objects than those originally intended.—Dr. Dain entered a spirited protest against the motion, which came, he said, particularly unkindly from Essex, which had received £400 from the trust a few years before and had used it to establish one of the most successful public medical services in the country. No instances of violation by the trustees being specified, the conference, by a very large majority, agreed to pass to the next business.

Dr. T. P. Leighton (Lancashire) moved to extend the assistance given to aged and infirm practitioners, and to provide also for practitioners whose means were straitened and who suffered from chronic ill-health.—Dr. Dain opposed this suggestion on the ground that it was not desirable to turn the fund into a charity.—Dr. Leighton replied that chronically ill practitioners were on exactly the same footing as the aged and infirm, but failed to convince the conference of the wisdom of extending the provision.

Dr. J. P. Williams introduced a motion to allow panel committees which had paid their quota to receive and expend the net income from their contribution. Lancashire proposed, for instance, he said, to subsidise holidays for practitioners who could not afford them. The central committee would in all cases be asked for permission.—Dr. C. R. Lunn (Warwickshire), though no supporter of bureaucratic government, found the motion impracticable. Nevertheless, he thought the trustees should consult the local panel committee before assisting an aged practitioner.—The motion was lost.

Some Current Problems

Dr. Dain, as chairman of the Insurance Acts Committee, then moved the reception of the report of the committee on action taken during the year. At the last conference, he recalled, it had been resolved that the provision of a fee for anæsthetics should be left to the panel committees. The Ministry, however, had pointed out the difficulty that might arise if it were suggested in Parliament that, owing to the local committees not being required to pay a fee, insured persons were being deprived of facilities which they had previously enjoyed. The panel committee for London, the body most interested, had decided that the question ought not to be pressed at present, and the Minister had been notified accordingly. The Royal Commission on Unemployment had recommended that children should come on to the panel immediately on leaving school; this suggestion, he thought, would probably meet with the approval of insurance practitioners generally. The commission's other recommendation, that the income limit should be raised from £250 to £350 a year, would undoubtedly be opposed most vigorously, and the I.A.C. had taken an early opportunity of saying so.

The pension scheme, Dr. Dain announced, had been received favourably, and was regarded as one of the best pieces of business done by the I.A.C. in recent years. The maximum sum assured now amounted to nearly £1,300,000, and by the end of the year should have risen to £1,750,000. The response had been a surprise to the insurance companies, and was continuing.

It had been disclosed, said Dr. Dain, at the conference of the Association of Insurance Committees, that a number of doctors found themselves tied hand and foot and practically the paid servants of the moneylenders who had financed the purchase of their practice. This distressing state of affairs was largely unnecessary, as a number of insurance companies were prepared to advance money on reasonable terms.

In some insurance areas, Dr. Dain reminded the conference, the press had been able to obtain copies of the reports of medical service subcommittees before the meeting of the insurance committee to which they were reporting. The Ministry had agreed, he said, that such a practice was not fair and might prejudice the practitioner's case, but the London committee still declined to alter its procedure, and the Ministry had said that it could not compel this committee to do so. The I.A.C. was prepared to support any action by London if it were found that a practitioner's interests were affected by the publication of these reports.

The Unemployed: Prolongation of Insurance

Dr. J. F. Lambie brought forward a strong motion by Glasgow that the conference viewed with the greatest misgiving the prospect of many insured persons losing their right to benefit at the end of the current year, and that the I.A.C. should be requested to continue its pressure on the Government to secure that these persons should receive medical treatment through insurance committees. He doubted whether practitioners in the South of England realised how important the matter was in the industrial districts of Western Scotland, with their high unemployment figure. At the beginning, he said, the Government had contributed two-ninths to the fund; it now only contributed one-seventh for men and one-fifth for women. If it would return to its original contribution, there would be no problem. Glasgow proposed that panel committees should be able to apply to the local authority to allow these persons choice of doctor under public assistance; also that the panel committees should be able to discuss remuneration with the local authorities.

Dr. Dain replied that while the I.A.C. and all practitioners were anxious to keep these people on medical benefit and not lose contact with them, several essential factors must be regarded. If the Government had not reduced its contribution there would have been more money in the scheme, but these people would not have been entitled to it. If the scheme were to be kept intact as an insurance scheme, persons should only draw benefit if they paid premiums. Moreover, it was more appropriate that influence should be exerted on the Government by persons who were not financially interested. The I.A.C. would, of course, use any opportunities that occurred, and he understood that this was what the motion meant it to do.

Dr. H. J. Cardale (London) agreed on the importance of retaining the integrity of the scheme. He considered that an arrangement might well be made between panel committees and local authorities, but declared that the motion did not violate the principle of insurance.

Dr. Chase remarked that the Federation of Insurance Committees was strongly in favour of unemployed persons being kept on benefit. The National Association had resolved recently by a small majority that they should be retained, but did not feel nearly so strongly on the matter, and London representatives did not agree to their retention. The important point was where the money was to come from. The insurance committees, which had the records and the administrative equipment, were the proper bodies to carry on the work.

Dr. D. J. B. Candler-Hope (Yorkshire, North Riding) pointed out that the cost would inevitably fall on the public assistance committees, and the question was merely how they were to raise it. Two categories of persons were affected; those absolutely without means, and those who would receive monetary but not medical benefit. The former only would come under the public assistance committee. In the industrial area of the North Riding a treatment society had been formed; the family paid a weekly contribution and any man who ceased to receive medical benefit could come into the scheme for a small additional subscription.

Dr. Lambie, in reply, retorted that the scheme could hardly be called a water-tight insurance scheme while three parties contributed and only one drew benefit; it should be administered with a latitude not applied to an ordinary society. He feared lest the profession, knowing it was financially interested, might say nothing at all. The Glasgow Members of Parliament, when approached on the matter, had taxed the committee with having remained silent in July when the Bill was still before the House, and having only moved when it had become the law of the land. The profession was surely entitled to voice its opinion that the status of the Act should be preserved.

The motion was carried by a large majority.

The Cut and the Capitation Fee

A number of committees had motions on the paper urging that the cut should be abolished and the basis of the capitation fee revised. Dr. Dain, in moving that the appropriate paragraphs of the report be approved, said that the Government would not consider the restoration of the cut to single sections of the community. The I.A.C. had drawn up its case for revision of the capitation fee and the Minister had said that the question must be submitted to a board of arbitration, as it had before. Such a board would, said Dr. Dain, inevitably be biased by its knowledge of economic circumstances in other walks of life, and would not be able to treat the capitation fee on its merits. It would, in fact, not be acting fairly to the community in doing otherwise. The I.A.C. must therefore choose the right moment for convening a board, and that moment would not come until evidence of returning prosperity was more substantial than at present.

Dr. J. Taylor (Banff) moved that the time had arrived when the 10 per cent. deduction, voluntarily accepted in 1931, was not now justified and should cease; also that action taken to this end should have preference over the reconsideration of the capitation fee. He pointed out that a bridge-player did his utmost to fulfil his contract and also to take one or two additional tricks. Similarly, the panel doctor aimed continually to go beyond his contract and give extra services to his patients. Whereas, however, the bridge-player scored points both for contract and for extra tricks, the doctor was paid for his contract less 10 per cent. and for his extra services got nothing, and the Ministry did not consider it expedient to discuss the question. In playing the final hand with the Minister the chairman of the I.A.C. would have to defeat several sinister cards which the Minister had up his sleeve, such as the national crisis, the May report, and the pressure of approved societies. He would find his two long suits, work well done and public opinion, more valuable even than skill and judgment.

Dr. Lunn, whose division had put forward a similar motion, spoke of the hardship of the cut to small practitioners, many of whom it had deprived of a holiday. Local authorities had restored the cut, and the panel had an even stronger case.—Dr. C. F. Turner (Coventry) added that doctors were also doing much more charitable work than they had done.—The motion was carried unanimously.

Dr. A. Beauchamp (Birmingham) took the matter a step further by moving that the restoration of the cut should be given priority over any relief of direct taxation, and this suggestion also found the approval of a large majority, as did a warning by Dr. E. A. Gregg (London) that all bodies which had been subject to cuts should combine in an approach to the Government in order that each might not be told that it could not be considered separately.

The conference agreed with one half of a motion by Essex that the present capitation fee of 9s. was inadequate, and consented to the withdrawal of the second half, which directed the I.A.C. to call on the Minister to increase the capitation fee at the beginning of next year. It also agreed to a motion by Glasgow that the claim to a revision of the fee was endangered by the practice of accepting contract rates from local authorities on a lower basis.

Other Matters

The conference agreed with the settlement reached between the I.A.C. and the Minister concerning insured persons who have just been examined by a regional medical officer. If an unemployed patient is passed as fit for work he cannot draw sickness benefit but he is also deprived of unemployment benefit, because he is not registered at the labour exchange as available for work. Patients are in future to be told, by the addition of a sentence to the notification form, that their doctor will receive a report on the following morning, and that they should see him as soon as possible.—Dr. Dain did his best to convince Middlesbrough that this arrangement does not mean that the panel doctor must always agree with the R.M.O., and to persuade Carmarthenshire that it was not the duty of the R.M.O. to inform the patient direct or, in the alternative, to go on paying him benefit until his next visit to the doctor—from what fund did not appear in the motion. The conference agreed that these committees had not fully understood the position, and rejected their proposals.

The I.A.C. does not see eye to eye with those committees who wish for more medical representation on insurance committees, holding that the personal influence of a known and trusted individual doctor is much more important than the votes of two or three little-known medical members. Dr. Cardale proposed to appoint deputies to act when the regular member was absent, on the principle that half a loaf is better than no bread at all and that the opinion of any medical man on a medical question carries considerable weight with a lay committee. The conference agreed with his arguments, but also endorsed the general principle expressed by the I.A.C.

Considerable opposition was shown to the "collective own arrangers" scheme, by which the staffs of institutions are placed on the panel of the institution's medical officers.—Banffshire's objection was that free choice of doctor was not allowed, and that insured persons could not obtain medical benefit when absent from the institution. Dr. Taylor, who moved that these schemes should cease, declared that the practitioners' fund was being raided for the benefit of the public health and public assistance committees of local authorities.—Dr. R. A. Walker and Dr. M. W. Renton, from Kent, spoke vigorously against an alleged abuse by which members of an institution staff, though nominally insured, are said to receive no treatment from their own medical officers, while the doctor whom they attend as private patients is not entitled to claim remuneration.—Dr. Dain pointed out that if the experienced medical politicians of Kent had chosen to take action at any time they could have had such irregularities remedied under the ordinary disciplinary regulations. In answer to a point made by Dr. J. J. Day (I.A.C.), who also practises in Kent, he remarked that it was a necessary condition of the contract between the local authority and the member of the staff of an institution that he should be on the institution panel; the question of canvassing did not therefore arise. A medical officer who was precluded from visiting outside the institution was not entitled to have outside persons on his panel. The I.A.C. would investigate the position of an insured person who fell ill and was told to go home from the institution. The Banffshire motion was carried by a large majority.

The conference agreed to a motion by London that a pregnant woman should be entitled to an antenatal benefit for a period up to eight weeks before her confinement, and that she should not also receive sickness benefit.

Dr. A. J. Lewis (Southport) moved that the I.A.C. should be asked to take any possible steps to enable insurance practitioners to claim fees for services they have given to insured persons injured in motor accidents who can claim compensation from the motorist responsible.—Dr. Dain replied that if the patient insisted on being treated as a private patient the doctor was probably entitled to claim a fee. The position might be anomalous if insurance practitioners demanded payment for an injury caused to an insured person in one particular way and not in any others. The problem was a national one and far wider than insurance practice. To press the matter might well prejudice negotiations concerning capitation fee. The suggestion was referred to the I.A.C. for consideration.

At the conclusion of the conference Dr. Jonas was re-elected chairman for next year.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICES

Surg. Lt. J. E. Davenport, R.N.V.R., to be Surg. Lt. J. G. M. Nisbett to be Surg. Lt.

The following appointments are notified: Surg. Comdr. J. C. Kelly to *President* for R.A.F. Medical Officers' Course.

Surg. Lts. F. W. Besley to *Bryony*, C. J. Waring to *Furious*, J. M. T. Reese to *Victory* for R.N.B., and to *Iron Duke*, and G. A. Lawson to *Herald*.

ROYAL NAVAL VOLUNTEER RESERVE

Proby. Surg. Sub-Lt. C. M. Lamont to be Surg. Sub-Lt.

ARMY MEDICAL SERVICES

Lt.-Col. and Bt. Col. J. W. L. Scott, R.A.M.C., to be Asst. Dir.-Gen., A. Med. Servs., War Office.

ROYAL ARMY MEDICAL CORPS

Maj. A. G. Biggam from the secd. list is restd. to the estabt.

Capts. H. F. W. Adams, F. J. Lidderdale, and D. S. Jones to be Majs.

TERRITORIAL ARMY

Lts. D. G. Robinson and E. J. Fitzgerald to be Capts.

Supernumerary for Service with the O.T.C.—A. G. D. Whyte (late Cadet Staff Serjt., Aberdeen Univ. Contgt., Sen. Div., O.T.C.) to be Lt. with seniority for duty the Med. Unit of the Aberdeen Univ. Contgt., Sen. Div., O.T.C.

ROYAL AIR FORCE

Flying Officer F. I. G. Tweedie is promoted to the rank of Flight Lt.

London Homœopathic Hospital.—Major E. A. Attwood retires from the secretaryship of this hospital on Oct. 31st after 50 years of continuous service.

SPECIAL ARTICLES

SICK ABSENCE DUE TO CERTAIN CONDITIONS

By H. V. Prynne, C.B.E., D.S.O., F.R.C.S. Eng.
CHIEF MEDICAL OFFICER TO THE POST OFFICE

The estimation of the results of a method of treatment is notoriously difficult, and the "follow-up" of cases often furnishes very inconclusive evidence as regards the after-health of the patient. On the one hand the patient often minimises any remaining disability out of gratitude to the physician or surgeon who has spent his time and skill in efforts to effect a cure, while on the other the investigator often finds it difficult to allot cases with accuracy to the customary categories such as "cured," "improved," and so forth. Some objective standard is necessary and sick absenteeism appears the most suitable criterion by which to assess the effects of treatment.

The Post Office has special facilities for obtaining accurate information of this nature. The number of staff employed falls little short of a quarter of a million, and in the case of established staff every day of sick absence is recorded, whereas the first three days of absence are not included in the statistics of the National Health Insurance. Only disabilities which exhibit unequivocal objective evidence, such as is found on laboratory research or in the course of operative treatment, are suitable for an investigation of this character. Conditions described in broad terms like rheumatism and gastritis, where the diagnosis is based on subjective symptoms, are not capable of accurate analysis, since the cause is variable and errors of diagnosis are frequent.

In this investigation the initial absence for a disability, or period during which an operation was performed, have been excluded from consideration.

Gastric and Duodenal Ulcer

The following figures show the sick absence for disorders of the digestive system alone. The disorders include gastro-enteritis, gastritis and dyspepsia, gastric and duodenal ulcer, enteritis, and diarrhœa. The average sick absence for these conditions incurred throughout the staff amounted to 0·917 of a day per year per employee. One group of 197 cases of gastric and duodenal ulcer was examined in 1923 with the result show in Table I.

Table I

	Cases.	Total years covered.	Sick absence.*
Gastric ulcer—			
With operation	25	113	12·1
Without operation	106	595	13
Duodenal ulcer—			
With operation	12	62	20·3
Without operation	54	305	16·1

* In this and other tables and in the text "sick absence" denotes average number of days away from work per year per employee, owing to the type of disorder under discussion—in the case of Table I., digestive disorder.

Operation cases.—Investigation of a further series of gastric and duodenal ulcer cases where operation had been performed was recently made: 146 records were examined; the total years covered was 838, and after operation the average sick-rate per year per employee for disorder of the digestive system was 15·6 days.

This group of 146 cases was subjected to further examination as regards sick absence after operation of a particular nature, and the result was as given in Table II.

Table II

	Cases.	Total years covered.	Sick absence.*
Gastro-enterostomy	88	589	12·2
Suture	43	192	22
Excision	15	57	28·7

The prospects of recovery after operation was next investigated in accordance with the following scale:—

(*a*) The minimum period of service after operation has been taken as four years.

(*b*) "Recovered" cases are regarded as those who have not exceeded one day sick absence for digestive disorder per year (the average sick-rate for digestive disorder is approximately one day per year per employee).

(*c*) "Improved" cases are regarded as those who have not exceeded ten days for digestive disorder per year.

(*d*) "Not improved" are regarded as those who have exceeded ten days for digestive disorder per year.

The result is given in Table III.

Table III

Nature of operation.	Cases which have completed 4 years' service.	Recovered.	Improved.	Not improved.
Gastro-enterostomy	68	23	24	21
Suture	20	4	1	15
Excision	7	2	1	4

The figures in Table IV. show sick absence for all conditions in days per year per employee of a group of 684 operation and non-operation cases, the average sick-rate for all employees being between 10 and 12 days.

Table IV

	Cases.	Years of service covered.	Sick absence.*
Gastric ulcer—			
Male (with operation)	113	550	41·78
Female (with operation)	7	53	48·24
Male (no operation)	175	919	27·27
Female (no operation)	41	349	24·42
Duodenal ulcer—			
Male (with operation)	176	885	40·53
Female (with operation)	3	17	43·47
Male (no operation)	155	896	25·36
Female (no operation)	14	110	32·63

Any absence due to operative treatment for ulcer is included in the figures.

The effect of *alkaline treatment* of cases not operated on was also investigated: 128 records were examined; the total years covered was 359 and the average sick-rate per year per employee for disorder of the digestive system was 17·6 days, excluding the absence during which the treatment commenced. A large number of the patients were reported to have undergone a definite course of treatment from the commencement of the illness varying from a month to several years, the average duration being eight months. This group consisted of 89 cases, the total years covered was 235 and the average sick-rate for disorder of the digestive system was 11·9 days per year per officer. In the remaining 39 cases treatment was described as "intermittent," "occasional," &c. The number of years covered in this group was 124, and the average sick-rate for disorder of the digestive system was 28·4 days per year per officer. Of the total of 128 patients, 40 have remained entirely free from sick absence on account of digestive disorder since their resumption of duty following the absence during which alkaline treatment commenced, and the periods for which they have remained free are given in Table V.

TABLE V

Alkaline treatment.	Definite course cases.	Intermittent treatment cases.
Under 1 year	19	4
Between 1 and 2 years	6	1
,, 2 ,, 3 ,,	6	Nil.
,, 3 ,, 4 ,,	1	1
,, 4 ,, 5 ,,	1	Nil.
,, 5 ,, 6 ,,	1	Nil.

Exophthalmic Goitre

Records of 112 cases were reviewed. The total years covered was 527 and the average sick-rate for all conditions per year per officer was 27·8 days, of which 11·4 were due to recurrence of exophthalmic goitre and 3 were due to nervous and heart symptoms, probably associated with the condition of exophthalmic goitre.

Of the total of 112 patients 46 have had no recurrence of the condition since their resumption of duty and the periods for which they have remained free are as follows :—

Under 1 year	16	Between—	
Between—		5 and 6 years	1
1 and 2 years	9	8 ,, 9 ,,	3
2 ,, 3 ,,	2	10 ,, 11 ,,	3
3 ,, 4 ,,	6	14 ,, 15 ,,	2
4 ,, 5 ,,	3	19 ,, 20 ,,	1

The average sick-rate for all conditions of the remaining 66 during a total period of 350 years was 36 days per year per officer.

Seventeen cases in which thyroidectomy was performed were examined. The total years covered was 44 and the average sick-rate for all conditions per year per officer was 28·5 days, of which 11·6 were due to recurrence of exophthalmic goitre and 5·4 to nervous and heart symptoms probably associated with the condition of exophthalmic goitre. Of the 17 cases 12 have had no recurrence of the condition since their resumption of duty, and the periods for which they have remained free are as follows :—

Under 1 year	1	Between—	
Between—		3 and 4 years	2
1 and 2 years	3	4 ,, 5 ,,	1
2 ,, 3 ,,	4	9 ,, 10 ,,	1

Diabetes

The number of cases reviewed was 37. The total period covered was 143¾ years and the average sick-rate for all conditions per year per officer was 27 days, of which 21·3 days were due to *diabetes*.

TABLE VI

Age.	Cases.	Total years covered.	Sick absence. All conditions.	Sick absence. Diabetes.
20–30	12	55	25·7	19·4
30–40	7	30½	31·3	27·5
40–50	12	43	32·5	25·5
50–60	6	15¼	7·6	3·6

Table VI. shows the sick absence of the 37 patients divided into groups according to the age of the officer at the commencement of the illness.

Of the 37 patients 12 remained entirely free from sick absence on account of diabetes after resumption of duty following the initial sick absence, and the periods for which they have remained free are as follows :—

Under 1 year	3	Between—	
Between—		3 and 4 years	1
1 and 2 years	4	4 ,, 5 ,,	1
2 ,, 3 ,,	2	8 ,, 9 ,,	1

All the patients commenced insulin treatment, and with three exceptions this was continued to date, or to date of leaving duty in the case of those who died or retired. Of the exceptions, two retired on account of age after very little sick absence within four years of the onset of the condition. The other had a small supply of insulin for approximately 12 months only after resumption of duty. His sick record for four and a half years has been good.

Notwithstanding insulin treatment, 5 of the 37 died or retired on account of diabetes within the following periods :—

Between—		Between—	
2 and 3 years	2	4 and 5 years	1
3 ,, 4 ,,	1	5 ,, 6 ,,	1

Renal Calculus

The average sick absence per male employee for renal calculus and hæmaturia in one year was 0·06 of a day.

The number of cases reviewed was 51, and the average sick absence divided into operation and non-operation cases is shown in Table VII.

TABLE VII

	Cases.	Total years covered.	Sick absence. All conditions.	Sick absence. Renal calculus.
Operation cases	29	151½	27·3	17·7
Non-operation cases	22	96	25·1	11·3

The sick absence for renal calculus is included in that shown under "all conditions."

Since resumption of duty 14 operation cases and 4 non-operation cases have remained free from sick absence on account of renal calculus, and the periods for which they have remained free are as follows :—

	Op.	Non-op.		Op.	Non-op.
Under 1 year	5	1	Between—		
Between—			4 and 5 yrs.	2	1
1 and 2 yrs.	1	—	5 ,, 6 ,,	—	1
2 ,, 3 ,,	1	1	6 ,, 7 ,,	1	—
3 ,, 4 ,,	2	—	10 ,, 11 ,,	2	—

Eight operation cases and two non-operation cases subsequently *died or were retired on* account of kidney trouble within the periods shown.

	Op.	Non-op.		Op.	Non-op.
Under 1 year	1	—	Between—		
Between—			7 and 8 yrs.	1	—
1 and 2 yrs.	—	2	8 ,, 9 ,,	1	—
3 ,, 4 ,,	1	—	11 ,, 12 ,,	2	—
4 ,, 5 ,,	1	—	25 ,, 26 ,,	1	—

Empyema

The number of cases reviewed was 17. The total years covered was 91⅔ and the average sick absence for respiratory conditions alone was 13 days.

Of the 17 patients 5 have been free from sick absence on account of respiratory conditions since resumption of duty following the absence due to empyema, and the periods for which they have remained free are as follows :—

Under 1 year ..	1*
Between— 2 and 3 years	1
Between— 3 and 4 years	2
5 ,, 6 ,,	1

* Officer resigned.

In addition, except for a short absence on account of a respiratory disorder soon after resumption of duty, one officer has been free from sick absence on account of such conditions for ten years. Three patients died within three years of resumption of duty on account of respiratory conditions. In addition to the 17 patients who resumed duty it was found that 6 had died or retired during the initial absence. Excluding the one officer who resigned, the total number of cases of empyema reviewed was therefore 22 and the summary of the effect of the condition is as follows :—

Died or retired during initial absence..	6
,, ,, within 3 years ..	3
No ill-effects	5
Still serving, but incurred an average sick-rate of 12·1 days per year per officer for respiratory conditions	8

Semilunar Cartilage Injury

The effect of operation on the knee as regards sick absence was investigated.

Conservative treatment.—The number of non-operation cases reviewed was 43 and the total years covered was 109; 24 cases incurred further sick absence on account of the old injury, and the average sick absence due to that cause was 7·1 days. In addition, 3 patients incurred sick absence due to further accidents to the same knee; 16 cases incurred no sick absence due to the knee for a total period of 34½ years.

The summary of the results of the condition is as follows :—

Incurred further sick absence due to old injury	24
,, sick absence due to further accidents to the knee	3
,, no further sick absence due to old injury..	16

A number of these cases were subsequently operated on but the sick absence caused thereby, and also the sick absence caused by the original injury, have been excluded.

Operative treatment.—The following 42 cases of operation reviewed covers many of those included in the previous statement after operation was performed, but the sick absence caused by the operation in these and also all other cases has been excluded.

For the 42 patients the total number of years covered was 123. Five cases only incurred further sick absence on account of the condition of the knee, and the average sick absence due to that cause per year per officer (including all the 42 cases) was 0·18 of a day. In addition, 5 cases incurred sick absence on account of further accidents to the knee.

The summary of the results of the operation is as follows :—

Incurred further sick absence due to the condition ..	5 (11·9%)
,, sick absence due to further accidents to the knee	5 (11·9%)
,, no further sick absence due to the knee	32 (76·2%)

My thanks are due to the editor of *Industrial Welfare and Personnel Management* for permission to use certain of the figures which appeared in his journal as part of a paper which I read before the advisory medical committee of the Industrial Welfare Society.

MEDICINE AND THE LAW

The Dating of Industrial Disease

THE law courts sometimes inquire exactly when a patient's disease began. How far can medical evidence answer? Doctors can tell the court that on a certain date they found no trace of disease, but on a later date observed symptoms of it in an early or advanced stage; knowledge of the cause and progress of the disease in other cases and information of the patient's history and occupation may enable them to estimate the disease to have reached a definite stage at some previous date. Questions of this kind arose in recent workmen's compensation proceedings (R. Smith and Son *v.* Eagle Star &c. Insurance Co.). The plaintiffs, a firm of file cutters at Wolverhampton, insured their men against the usual industrial risks. The policy covered liability for personal injury or disease, fatal or non-fatal, "which during the continuance of the policy shall be sustained or contracted by any workman while in the employers' direct control." A man named Hill, a file cutter for over 20 years, entered Smiths' employment in March, 1928. The dates are material. He worked for them as a file cutter until June 16th, 1930; they then put him to other work till Oct. 31st, 1931, when he left them and became unemployed. On Dec. 30th, 1932, he was examined by the Silicosis Board and was certified as totally disabled by silicosis and tuberculosis. The certificate gave the date of the total disablement as July 18th, 1932. Smith and Son being his last employers, Hill claimed compensation from them and they paid him 30*s.* a week. The insurance policy however had lapsed on June 16th, 1930, before the date of the total disability. The insurance company declined to indemnify the employers for the payments to Hill; it argued that it was liable only for events occurring "during the continuance of the policy" and not for something which happened more than two years after the policy lapsed. The dispute went to arbitration. The arbitrator held that Hill had contracted the disease before the policy lapsed. The disease, he said, was a gradual one, and nobody could tell exactly when it began; Hill's work with Smith and Son had contributed to his disease, but, as the man had been a file cutter for many years previously, it was not possible to say that he first contracted the disease while in Smiths' employ. The arbitrator therefore decided that the employers' claim on the insurance policy failed. The employers appealed to the High Court where Mr. Justice Roche reversed the arbitrator's decision. Applying his experience in the interpretation of commercial documents, the judge ruled that the word "contracted" in the policy did not necessarily mean "first contracted," but would cover the gradual process of silicosis. The judge said the insurance company must pay in view of two facts found by the arbitrator —namely, that Hill's disease (*a*) was contracted before he left Smiths' employment, and (*b*) was contributed to by that employment.

The Workmen's Compensation Act makes employers insure their men against industrial accidents. It also treats certain industrial diseases as accidents, imposing liability upon the employers for whom the workman has worked during the 12 months prior to his disablement by the disease. The certified date of Hill's disablement brought him within the statutory 12 months. There was thus no doubt that Hill was entitled to compensation, but, in the circumstances

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of the policy, there was a doubt as to who should find the money.

A Witness's Ordeal

A cheerful turn was given to a criminal trial last week at the Central Criminal Court. A motorist was being tried on the charge of having been under the influence of drink while driving his car. A medical witness, called by the prosecution, gave evidence that he had applied the Romberg test, asking the defendant to stand with his feet together and his eyes shut. The learned recorder asked the witness if he could himself pass the test without swaying. The witness thereupon left the box and gave a demonstration. He put his feet together, closed his eyes and stood for some ten seconds. The recorder said he noticed a distinct sway. The evidence against the accused was presumably not otherwise strong and the jury stopped the case and acquitted him. The confusion of an expert is never an unpopular phenomenon in a court of law, and medical witnesses who mention the Romberg test must for the present expect to be invited to apply it to themselves.

ROYAL COLLEGE OF PHYSICIANS OF LONDON: THE HARVEIAN DINNER

THE annual Harveian Commemoration Dinner was held at the College on St. Luke's Day, Oct. 18th, when Lord Dawson of Penn, as president, received a representative series of guests. In submitting the toast of the memory of William Harvey he pointed out that the great discovery of the circulation of the blood was a milestone in the history of medicine, for it marked the introduction into the study of medicine of scientific methods. He referred eloquently to the increasing manner in which medicine was entering into all departments of social life, in testimony of which he pointed to the distinguished representatives of different State services and Government departments who were present round the table. He coupled with the toast the names of Sir Austen Chamberlain and the Dean of St. Paul's. Referring to the former's distinguished career he said how valuable to the cause of medicine it was that Sir Austen should now be closely associated both with the London School of Hygiene and Tropical Medicine and the new London Post-graduate Centre. He spoke warmly of the medical philosophy which distinguished the writings of Dean Inge, and reminded the audience that in past times the Dean of St. Paul's had had a very intimate association with medicine. The famous Dean Colet had, even after the foundation of the College of Physicians, the duty of examining all aspirants to practise medicine within seven miles of the centre of London, and of finding them fit or otherwise for their duties. Dean Colet, he added, had left on record a low opinion of the merits of some of the candidates, and Lord Dawson suggested that some present who had discharged the function of examiner would recall similar cases to-day.

Sir Austen Chamberlain, in reply, made no close reference to contemporary politics other than to suggest that the body politic appeared to be the victim of attacks of recurrent fever, which had not yielded so far to remedial or sedative treatment. But he looked forward, he said, to better results, being quite hopeful of the state of the patient. The solution of present difficulties would be found in the spread of truth and the growth of accurate knowledge of the conditions and circumstances leading up to present conditions, but patience as well as judgment would be required before the febrile manifestations would disappear. He alluded to his famous father's deep interest in the health of our colonial subjects, which had led him to be a pioneer supporter of the researches now going on in tropical disease, and he spoke with confidence of the great results which must follow from the foundation in London of a representative post-graduate centre.

Dean Inge, having also briefly replied, Sir Charlton Briscoe proposed the health of the Harveian Orator, a duty which he said always devolved upon the senior censor of the College. He congratulated Sir Thomas Lewis on the learning displayed in his forcible plea for proper opportunities for the study of physiology.

Sir Thomas Lewis in response was humorous in his description of the difficulty which the clinical observer had to obtain from the patient direct answers to even simple inquiries.

Sir StClair Thomson then asked permission to present an "antimonyall cuppe" of the seventeenth century to the College. Displaying the cup, a small chalice made of antimony, he said that only one or two of these cups were now known to be in existence, and he explained their medicinal use. The antimonial cup derived its therapeutic properties, he said, from the fact that if white wine was left standing within it for a time a sufficient dose of antimony was absorbed to produce an emetic draught. He apologised for alluding to the process of vomiting, but he would remind his hearers that classical records showed that vomiting was self-induced by fashionable Romans in the days of Nero as a relief to surfeit, the gourmand being able to go on eating after emesis. The cups were said to be frequently met with in monasteries.

Among the guests present, in addition to Sir Austen Chamberlain, were the Hon. G. Howard Ferguson, High Commissioner for Canada; Lord Cromer, Lord Chamberlain; F.M. Lord Milne; Sir William Llewellyn, P.R.A.; Lord Trenchard, Marshal R.A.F. and Commissioner of Metropolitan Police; Sir Patrick Duff, Permanent Secretary to the Office of Works; Sir Holburt Waring, P.R.C.S.; Sir George Newman, Chief M.O. to the Ministry of Health; Sir Frederick Menzies, M.O. to the L.C.C.; Very Rev. Dean Inge; Lord Camrose; and the Editors of the *British Medical Journal* and *The Lancet.*

VIENNA

(FROM OUR OWN CORRESPONDENT)

MEETING OF THE ALPENLÄNDISCHER ÄRZTEVEREIN

TWELVE years ago medical men working in the Austrian alps formed a medical society of their own, and held their first meeting at Innsbruck. This society, which has flourished and gained prestige in German-speaking Central Europe, holds regular meetings once or twice a year. This year it met in Baden, near Vienna, about 400 members attending. The three main subjects discussed were: (1) diseases and injuries of the pancreas; (2) Bang's *Brucella abortus* infection in man; and (3) miscarriages, natural and induced. Each subject was presented from the clinical, surgical, medical, and pathological aspect. *Br. abortus* infections were discussed by Dr. Lauda, of Vienna, on the clinical side, by Prof. Russ on the serological and bacteriological side, while Prof. Schnürer spoke from the standpoint of the veterinary surgeon. It is worthy of note that the Austrian Ministry of Health has found it necessary to issue a circular to the profession, especially in the country districts, outlining the diagnosis and therapeutics of this disease. At the same time an inquiry has been organised to obtain exact data of its frequency amongst cattle and other domestic animals in the republic. It appears that of late a distinct increase of epidemic outbreaks, both amongst human and animal victims, has been noted here. Much attention was also paid to the papers dealing with miscarriages, especially to the lecture by Prof. Stiglbauer (Vienna) on the social and hygienic aspects and eugenic importance of miscarriages. He gave exact data collected in the course of an extensive investigation conducted on behalf of the Ministry of Health into this problem. Statistics on cases of artificially induced miscarriage admitted to a number of State hospitals in the larger provincial towns are available for the last five years. In these institutions, which serve about 10 per cent. of the entire population, there were about 7000 cases of abortion every year. Considering these figures and taking into consideration also the ratio of natural abortion to normal delivery, Prof. Stiglbauer estimates the number of cases of abortion in Austria per year as 100,000, with a mortality between 1 to 2 per cent. In the discussion following this paper, Prof. Zacherl (Innsbruck) laid stress on the frequent sequelæ of miscarriages, especially sterility. Incidentally, there was no agreement on the best methods of procuring abortion, or even on the purely eugenic indications for inducing it. The recent German jurisdiction on eugenic lines did not meet with much approval at the congress. Abdominal surgery, chiefly that of the pancreatic gland, received much attention on the part of the surgeons. The leading professors of the Vienna and the Graz University clinics (Prof. Denk and Prof. Walzel), both high authorities on this subject, introduced and discussed modern views on the pathology and physiology of the gland, and were followed by pathologists and physicians. A large number of papers were also presented on septicæmia, thrombophlebitis and embolism in gynæcology and obstetrics, diphtheria and other epidemics in children, rheumatism, and meningitis.

PROFESSIONAL SECRECY

In the last two quarterly issues of the official *Aerztekammerblatt* of Vienna the problem of professional secrecy is discussed by Dr. Brecher, following on a certain incident. In the course of legal proceedings in respect of income-tax, a physician was asked by the court to give details of the names of his patients, and the fees he received from them. He stoutly refused to disclose the names, and legal proceedings were stopped pending clarification of this problem by decision of the supreme court. According to some Austrian law experts, only the police and the court in a criminal case may demand information from the doctor, and at their request he is bound by law to break professional secrecy. He may not be subpœnaed or otherwise forced to disclose names of patients and so forth in cases of private litigation or in civil actions. Other law experts hold that the term "professional secrecy" covers only diseases and information which come to the doctor's knowledge in his capacity as medical adviser. In several circulars and memoranda issued on various occasions by representative bodies of the profession, the doctor has been advised to adhere strictly to professional secrecy, even to his "personal discomfiture." In a judgment of the Austrian administrative high court, given in May, 1931, in a case involving income-tax, the doctor was told simply to state the number of his patients and the amount of fees received, and allowed to withhold their names on grounds that even "the fact that a certain person has consulted, say, a dermatologist or a gynæcologist or an aurist, may be detrimental to this person if it should become known publicly, as is possible when his consultations are noted in a court." The Austrian profession, unlike the German, is still bound absolutely to professional secrecy unless called upon to give evidence in criminal cases.

RESTRICTION OF CLINICS

Owing to financial pressure the Ministry of Instruction has decided to close down some of the institutions of the University. Two clinics fall victims to these budget difficulties: the second gynæcological clinic, to which Prof. Halban was appointed a year ago, has been closed, the work being transferred to the first surgical clinic under Prof. Denk. We have now only two clinics for obstetrics and gynæcology, whilst formerly three were hardly sufficient for the needs of students and midwives; but more far-reaching effects will undoubtedly result from the closing down of the clinic for diseases of the nose and throat, of which Prof. Hajek was the chief for 15 years. This laryngological clinic has for more than 50 years been the Mecca of students from all parts of the world, especially from America. Most European laryngologists have obtained some part of their training here, under Schrötter, Chiari, and Hajek. Since it was decided that the teaching of laryngology must be combined with that of otology, the independent existence of this clinic has been doomed. Hajek's clinic was renowned chiefly for work on the surgery of the throat and nose, broncho-œsophagoscopy, and phototherapy of tuberculosis. He has now reached the age-limit and has resigned his appointment. His clinic will be transferred to that of Prof. H. Neumann, the otologist, whose present ear clinic will gain even more importance than it had before. The splendid building where Hajek used to work will be taken over by the eye clinic of Prof. Lindner.

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

THE NEW SOUTH WALES MEDICAL SCHOOL

IN 1883 the first medical school of the University of Sydney was built as a small four-room cottage, and Anderson Stuart (later Sir Thomas Anderson Stuart), then but a recent graduate of Edinburgh, was appointed as first dean of the faculty. The original building was enlarged two years later by the addition of a large barn-like building which served as a dissecting room and preparation room. An increasing number of students required accommodation, and between 1887 and 1891 a large building was erected which at the time seemed to be out of all proportion to the demand and was generally referred to as "Stuart's folly." Additions, however, were required to this building in 1909, 1917, and 1922. Recently there has been erected a further large modern building—the gift of the Rockefeller Foundation—which will house the departments of medicine, surgery, obstetrics, pathology, and bacteriology. This building, which has been built close to the Royal Prince Alfred Hospital, is being opened at the end of September.

The history of the development of the medical school and medical teaching in New South Wales has been largely the story of the life of Sir Thomas Anderson Stuart, who was a man of unusual personal force, untiring energy, and clear foresight. Associated with him in the early years of the school were Sir Alexander McCormick, the pioneer of antiseptic surgery in Australia, who was the first lecturer, Prof. J. T. Wilson (now of Cambridge), who was in charge of the anatomy department from 1890 to 1920, and Prof. D. A. Welsh, who was appointed to the chair of pathology in 1902. Over 2000 students have now passed through the school, which looks forward at this jubilee to new endeavours. With its new medical building, it is more than ever before in a position to make its contribution to medical knowledge and to keep its proper place amongst the great medical schools of the Empire.

AMENDMENT OF THE VICTORIAN MEDICAL BILL

In the Victorian Legislative Assembly a medical Bill has been passed which, when it becomes law, will give to the Medical Board power to remove from the register of medical practitioners men who have been disqualified from practising in other States and countries because they have been found guilty of felonies or of serious professional misconduct. The Board will also have power to refuse to register any such persons that might come to Victoria in the future and to deregister habitual drunkards. Medical practitioners will be permitted to attend any inquiry of the Board into their conduct. The period within which a practitioner may appeal to a judge against deregistration or refusal of registration is reduced from six months to three months.

FINGER-PRINTS ON UNIVERSITY DIPLOMAS

The University of Sydney has decided to use thumb-prints as well as signatures on its diplomas as a means of identification. This decision follows representations by the Medical Board of New South Wales, which first made the suggestion in 1920, and pointed out to the University that a photograph taken at the time of graduation may provide very inaccurate material for identification after a lapse of years. The proposal was brought before the faculty of medicine, which recommended its adoption, and the senate approached the General Medical Council suggesting that this procedure should be followed by the qualifying bodies in England. To this the General Medical Council replied that it had no jurisdiction over the form of diploma issued. The South Australian Medical Board, after making inquiries in New South Wales, decided to adopt the method of attaching two thumb-prints and a signature to all diplomas issued in South Australia. Impressed by the ease of identification of South Australian graduates, the New South Wales Medical Board again recommended the custom to the senate of the University of Sydney; with the result, in future, all medical diplomas issued by the university will have not only the signatures of graduates but also both thumb-prints.

A PROPOSED COLLEGE OF NURSING IN VICTORIA

There is a proposal to establish a college of nursing in Victoria. Many meetings have been held, and one section of the nurses has decided to go on with its own plans for establishing the college. A suggestion was made to the council of the University of Melbourne that it should establish a diploma of nursing. A subcommittee investigated the suggestion and reported against it on the ground that the course proposed is not comparable with the standard required for other diplomas. Of the eight subjects which had been put forward only two or three appeared to be of university standard. The committee were of the opinion that the solution of the problem lay in the establishment of a college of nursing, which could issue its own diplomas and on the governing body of which the university should be strongly represented. The council of the university adopted the committee's report.

THE QUALIFICATIONS OF CORONERS

Inviting applications for the position of coroner recently, the Attorney-General of South Australia is reported to have said that the Government considered that a legal knowledge was more necessary than a medical training, in view of the nature of most of the deaths which are now the subject of coroner's inquest. This appears to be in accordance with the practice in most States in Australia.

ADVANCE IN THE TREATMENT OF BURNS

THE method of treating burns with tannic acid, first advocated by Dr. E. C. Davidson, of Detroit, in 1925, has been modified in detail, not in principle, since that time. At this moment, when the report[1] of a committee appointed by the Mines Department to advise on the treatment of men burned in colliery explosions has just appeared, it is instructive to look back on the developments in tannic-acid therapy during the past eight years. Some of the modifications suggested may be tinged with personal enthusiasm, but others seem to represent genuine advances in a method which has already reduced the death-rate due to burns from nearly 40 per cent. to 11 per cent. or less. In 1929, Mr. W. C. Wilson, at the request of the Medical Research Council, published his results in a series of 117 cases treated with tannic acid in the surgical clinic at Edinburgh. Discarding the use of compresses, recommended by Davidson, he sprayed the burned areas, after they had been cleaned, with a 2·5 per cent. solution of tannic acid; at that time he preferred to use ether for cleansing, as it had the advantage of removing any greasy substances applied before the patient was admitted to hospital. He generally found it advisable to have the patient anæsthetised while the burns were being cleansed, and gas and oxygen was the anæsthetic of choice when shock was severe: otherwise, he thought, ether could safely be given. Vigorous scrubbing was to be avoided because it increased the loss of serum from the burned surface. Warm tannic-acid solution was sprayed on, and quickly dried by means of electric lamps in a bed-cage, or by a current of warmed air. When the coagulum had formed the patient was allowed to remain with the burned surface exposed to the air, under a bed-cage. Compresses wrung out in tannic-acid solution were used to dress any burned surfaces necessarily submitted to pressure.

Other workers have developed a different technique. Last year Mr. J. H. Hunt and Mr. P. G. Scott, house surgeons at St. Bartholomew's Hospital, described the use, after cleansing of the burned area, of a 2·5 per cent. solution of tannic acid in ether, applied, under general or local anæsthesia, by means of a camel-hair brush. Once the coagulum had formed it was reinforced with collodion; and the dressing so formed peeled off after about 14 days, leaving clean skin underneath. They have also used a 5 per cent.

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[1] H.M. Stationery Office. Pp. 25. 6d.

aqueous solution of tannic acid, reinforced on the third day with collodion, for the treatment of mild burns, and this could be applied, they found, without need of an anæsthetic. They, too, condemned the use of a scrubbing brush for cleansing, as did Dr. D. M. Glover, who used the compress method in his series of over 300 cases at Cleveland, U.S.A. Mr. P. H. Mitchiner, who has used the spray method with success at St. Thomas's Hospital, thinks it too elaborate for general use, and has been employing compresses soaked in 2 per cent. tannic-acid solution and 1/2000 perchloride of mercury at the out-patient department of St. Thomas's Hospital since 1929. He leaves the dressing in position for at least a fortnight, and considers that the perchloride reduces the chance of sepsis. Other observers have tried to prevent sepsis in different ways. R. H. Aldrich produces a coagulum by means of gentian violet, which, he claims, has a specific antiseptic action on the streptococcus. Dr. W. Robertson and Dr. N. Howard Mummery propose the use of acriflavine without tannic acid, which Dr. Mummery applies in the form of a paraffin emulsion. Dr. J. A. Martinez, however, carries us back to the days of "laudable pus," and is undisturbed by the thought of sepsis under the tannic-acid coagulum. Let the pus collect, says he, until the coagulum is thrown off by the suppurative process; delay in the healing of burns is commonly due to the damage inflicted by frequent dressings. All these views, or references to them, have been set out in our columns.[2] It is to be added that Dr. D. B. Wells, of Hartford (Conn.),[3] with edifying thoroughness, puts his patients into a tannic-acid bath and lets them stay there for three hours while devoted nurses pick off bits of debris. After that he has the burned areas sprayed with more tannic acid.

THE REPORT TO THE MINES DEPARTMENT

The report to the Mines Department was prompted by the observation that so many of the men who leave the mine alive on explosion die afterwards from the effects of their burns. It has been compiled by a committee of six, who, besides three well-known Scottish surgeons, include Prof. J. S. Haldane, Dr. S. W. Fisher, H.M. Medical Inspector of Mines, and Mr. W. C. Wilson, and it is instructive to note the further evolution of method since the publication of Mr. Wilson's report in 1929. The committee lay emphasis on the importance of treatment at the time. Carbon monoxide poisoning is best treated on the spot with oxygen and carbon dioxide given for 10 or 15 minutes. Burned patients should be taken to hospital as soon as possible, and exposed burned areas may be covered with dry picric-acid dressings. The committee make it clear that carron oil, hopefully applied, is not only out of date but prejudices the patient's chance of recovery, because it interferes with tannic-acid treatment later. Even when the burns do not appear to be serious the patient should be carried to hospital on a stretcher and kept warm with blankets and covered hot-water bottles; exposure to cold or muscular exertion may augment the effects of carbon-monoxide poisoning. In hospital the burned areas should be cleaned under gas and oxygen anæsthesia, and 3–5 per cent. of carbon dioxide should be added to the mixture to increase the depth of respiration. Ether is contra-indicated because it has a depressing effect on the blood pressure. Cleansing is performed gently with a piece of gauze soaked in normal saline, *corrosive sublimate or biniodide of* mercury; ether and alcohol should not be used for cleansing unless an oily dressing has previously been applied, because they have an irritant action. The coagulating solution recommended contains 20 per cent. of tannic acid and acriflavine 1 in 1000; the committee find that the incorporation of acriflavine in the coagulating solution almost eliminates sepsis in superficial burns. If sepsis occurs in deep burns they find that a moist dressing containing a hypertonic saline solution promotes the flow of fluid in an outward direction only, and can be applied over the coagulum with perfect safety. To combat the fall of blood pressure which is such a dangerous feature of severe cases of burning, they recommend that 600 c.cm. of 6 per cent. gum-saline should be given intravenously before cleansing, if necessary, and that a further 600–1000 c.cm. should be given after cleansing to prevent a subsequent fall of pressure.

With a view to bringing these recommendations to the notice of mining people the Secretary for Mines is sending a circular letter to all mine owners and to mine rescue stations, outlining briefly the first-aid measures that can be taken to assist the victims of a colliery explosion. A copy of this circular will be sent to any medical practitioner who applies for it.[4]

THE LONDON MEDICAL EXHIBITION

Drugs and Pharmaceutical Preparations

(Continued from p. 951.)

(146) **The Marmite Food Extract Co., Ltd.** (Walsingham House, Seething-lane, E.C.), showed their well-known yeast extract, a rich source of vitamin B and a potent anti-anæmic agent, as well as being palatable and cheap; they mentioned its value in a very large number of disorders.—(99) **May and Baker, Ltd.** (Battersea, S.W.), showed many preparations, such as Opacol, a test medium for radiography; Stovaine, a noted local anæsthetic, and Scuroform, an anæsthetic which is completely insoluble in water and so its action is strictly limited to the point where it is placed and it is practically non-toxic. It has never been found to cause secretion reaction. Propidex ointment contains a mixed vaccine for boils, burns, ulcers, and other skin lesions, particularly when suppurating.—(148) **Menley and James, Ltd.** (64, Hatton-garden, E.C.), once again presented their popular products, the Iodex range of preparations, Eskay Neuro-Phosphates, and Pyridium, a urinary antiseptic. Their latest introduction is Pentnucleotide, a mixture of sodium salts of pentose nucleotides, for certain cases of leucopenia and for agranulocytic angina.—(103) **H. R. Napp, Ltd.** (3 and 4, Clements-inn, W.C.), exhibited a wide range of pharmaceuticals, including Normacol, an intestinal evacuant; Multibral, a new chemical preparation of sodium monobromoleate in coated pellets for prompt administration; Somnosal, a safe sedative; Xorox, a hæmotonic containing spleen, liver, stomach, and anterior pituitary; Raminal, a preparation for high blood pressure; and Anotal, a rheumatism tablet.—(73) **Oxo, Ltd.** (Thames House, Queen-street-place, E.C.), had two new preparations: Oxoid Liver Extract for injection for pernicious anæmia, and Oxoid Brand Vitamin A in capsules; they also showed their well-known meat extract and gland products.—(64) **Parke, Davis and Co.** (Beak-street, W.) showed their wide range of P.L. preparations, including Hebaral, a new hypnotic, rapid in action and of low toxicity, also useful in alcoholism and pregnancy disorders; Irradex, a new preparation of malt and iron with manganese and vitamins A, B, and D, for children and convalescents; Sal-Ethyl Carbonate tablets, a form of salicylate which does not disturb the stomach as it is slowly dissolved in the small intestine; and

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[2] See especially THE LANCET, 1932, ii., 793; 1933, i., 233, 662, 1138, 1152.

[3] Jour. Amer. Med. Assoc., 1933, ci., 1136.

[4] M.D. Circ. No. 64 from the Mines Department, Cromwell House, Dean Stanley Street, Millbank, London, S.W.1.

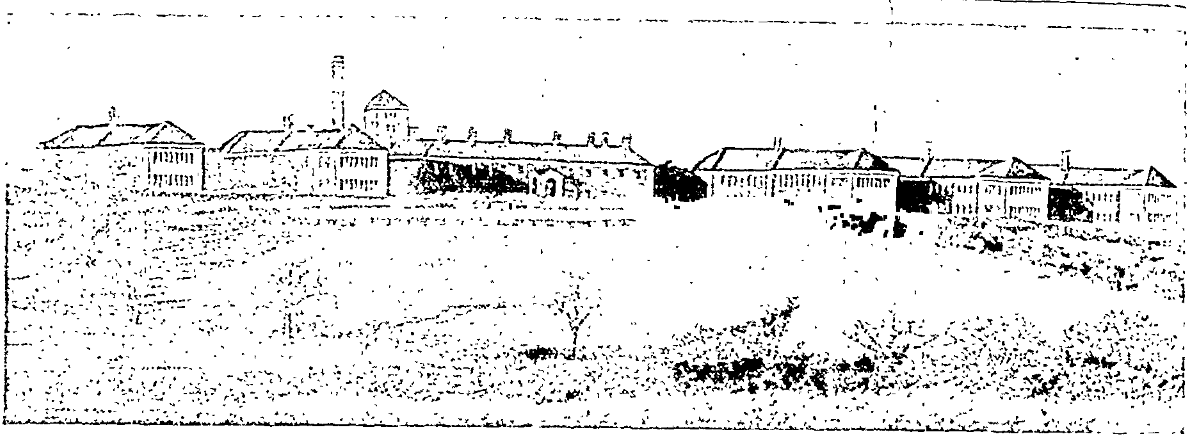
Hemoprotein, a liquid prepared from the fibrin of ox blood for non-specific protein therapy.—(75) Petrolagar Laboratories, Ltd. (Braydon-road, N.), in addition to their popular paraffin emulsion and Neobovinine 20 Compound, introduced a new preparation for nasal congestion, Endrine, containing ephedrine menthol, camphor, eucalyptol, and liquid paraffin.—(46) Pharmaceutical Corporation, Ltd. (39, Aldersgate-street, E.C.), showed their Novutox local anæsthetic, in cartridge form for charging syringes (Novutubes), and in a convenient packing of ampoules; also their Novaseptic germicide.—(50) Phillips Yeast Products, Ltd. (Park Royal-road, N.W.), newcomers to the exhibition, exhibited their Live Yeast Tablets, which have no excipient; these are recommended for all those ailments due to deficiency in vitamin B. The separate cells rapidly absorb water in the body and return to the condition of cells of moist barm.—(155) Reed and Carnrick (Coates and Cooper, 94, Clerkenwell-road, E.C.) showed their many endocrine preparations, particularly Endomin for nutritional anæmias, a preparation of metals in non-irritating, readily assimilable form; Thyracoids, the biologically standardised preparation of iodothyroglobulin; Nephritin, a preparation for renal disease; and Ovacoids, which contain all the hormones of the ovary and of the anterior pituitary.—(58) Research Products, Ltd. (12-13, Henrietta-street, W.C.), stressed their hormone preparations, especially ovarian and testicular hormone; and introduced a new capillary active Nasal Jelly containing menthol.—(147) Sandoz Products (J. Flint, 5, Wigmore-street, W.) drew attention to Calcibronat, a new organic salt presenting the combined sedative and neurotonic properties of the bromine-ion and calcium-Sandoz (calcium gluconate). They also showed their well-known Femergin, Optalidon, Scillaren, and Calcium-Sandoz.—(27) Savory and Moore, Ltd. (143, New Bond-street, W.), in addition to their well-known food, showed a range of pharmaceutical preparations including Dr. Jenner's Absorbent Lozenges for acidity; Urotropal, a urinary antiseptic for internal administration, of special value in septic conditions of the bladder; and Medilax, a new preparation for constipation attractively made up in silvered ovoids.—(47) Schering, Ltd. (3, Lloyd's-avenue, E.C.), showed their new preparation of Solganal-B Oleosum, the latest addition to the Solganal gold series, for injection in cases of infective arthritis and tuberculosis; it is put up in ampoules of sizes varying from gr. 0·01 to gr. 0·4. They also drew attention to their Progynon, a biologically standardised ovarian hormone, and Progynon Oleosum, which can be obtained in ampoules of 1000 and 10,000 mouse units.—(164) Sharp and Dohme, Ltd. (252, Regent-street, W.), particularly pointed out Felton's Serum for the treatment of lobar pneumonia and drew attention to their special typing service; specimens of sputum can be typed by an expert and the result telegraphed within a few hours. They also showed Solution S.T. 37, a stable, non-toxic germicide.—(89) Vitmar, Ltd. (Southfields, S.W.), showed their vitamin preparation; their laxative Cibrons, and Meolvol, an emulsion of cod-liver oil with honey, egg yolk, and orange juice. They were also showing several starchless and sugarless foods, such as chocolates, cakes, and biscuits, prepared by Callard.—(34) William R. Warner and Co., Ltd. (300, Gray's Inn-road, W.C.), exhibited Veganin, a sedative and analgesic; also Agarol, the well-tried compound of liquid paraffin, and agar-agar; and Anusol suppositories.

Surgical and Optical Instruments and Accessories

(90) Allen and Hanburys, Ltd. (Bethnal Green, E.), had on view a wide range of surgical instruments and appliances, including the latest model of their St. Bartholomew's Hospital operating table with self-locking device to fix it in any position. The table can easily be converted into a chair for urological work. They also showed electrically heated instrument sterilisers of a new design; stainless steel instruments and dressing tables; the improved Albee's bone saw; a new, noiseless, electrically driven pump for simultaneous negative and positive pressure; A. and H. Azoule plain and medium hard catgut; an all-rubber anæsthetic face-piece, adaptable to any face; and bags and cases of various kinds.—(30) Arnold and Sons (in association with Savory and Moore, Ltd., and John Bell and Croyden, 50-52, Wigmore-street, W.) displayed many surgical instruments and appliances, including the Arnold Operation Table, an improved model, on an oil pump base with a fool-proof action for maintaining the Trendelenburg position; the Arnold Clearlite headlamp; catheters and bougies; combined tonsil ligature and artery forceps; the Mayboil flexible elastic gum instruments which can be sterilised by boiling in water; and the Sparklet Resuscitator for the administration of gases in respiratory emergencies.—(25A) Bruce Green and Co., Ltd. (14, 16, 18, Bloomsbury-street, W.C.), among their ophthalmoscopes, retinoscopes, and other optical instruments, pointed out their new convenient electric head-lamp which has a battery on the headband, thus doing away with lengths of flex, and a focusing lamp.—(145) Clement Clarke, Ltd. (16, Wigmore-street, W.), displayed optical instruments, including especially apparatus for cultivating binocular vision; their Synoptophore trains strabismic children by means of moving coloured pictures.—(141) Stanley Cox, Ltd. (39, Gerrard-street, W.), had a display of X ray apparatus, and particularly demonstrated their Stanco surgical diathermy machine, useful for cutting in water for bladder work, for tonsils and other surgical diathermy.—(167) H. E. Curtis and Son, Ltd. (7, Mandeville-place, W.), showed their various abdominal belts and appliances and seamless elastic hosiery, and especially emphasised a new Super-elastic Truss with the tail attached to the upper instead of the lower margin of the pad, thus exerting an even pressure over the whole pad.—(86) Cuxson, Gerrard and Co., Ltd. (Oldbury, Birmingham), pointed out their new Variban First Aid Dressing, circular applications of acriflavine gauze spread on expandable material so that they fit firmly the part to which they are applied; also their Cellanband paste-impregnated bandages for use in cases of phlebitis; and their ligatures and surgical plasters of all kinds.—(142) C. Davis Keeler, Ltd. (47, Wigmore-street, W.), among their optical instruments and spectacles, showed the Keeler Decagon Ophthalmoscope, the only hand ophthalmoscope in existence which gives automatic reading of the refractive error, and also the Keeler wide-angle ophthalmoscope, a useful instrument for the practitioner as it gives a very large and brilliant picture of the fundus.—(65) The Denver Chemical Manufacturing Co. (London, E.) drew attention to Antiphlogistine, the original chemical poultice which they have marketed for so many years.—(33) C. W. Dixey and Son (20, Welbeck-street, W.) had on show a range of optical apparatus, and pointed out particularly their R. F. Jones Orthoptic Letters for exercising binocular vision, which are a form of toy so that the child can improve his binocular vision while at play. They also had a new reading glass shaped rather like a fish, which is easily portable and gives very high magnification and illumination.—(53) Domen Belts, Ltd. (licensed distributors of Jaeger Medical Supplies, 26, Sloane-street, S.W.), in addition to pregnancy, hernia, and other belts, also had a display of Jaeger Down and Jaeger Camel Down, both soft, warm, animal wool preparations for use where heat is required, as in pneumonia and rheumatism.—(119, 120, 135) Down Bros., Ltd. (21, St. Thomas's-street, S.E.), had a comprehensive display of instruments, including a new three-way direct blood transfusion apparatus, which can also be used for air replacement in chest work; stainless steel theatre tables; Hamilton Bailey's automatic local anæsthetic apparatus, and an improved model stainless steel operating table on firm pedestal base, with lateral control and improved

kidney bridge.—(154) J. and E. Ferris, Ltd. (33, Museum-street, W.C.), had an interesting display of artificial limbs and crutches of all styles.—(18) Theodore Hamblin, Ltd. (15, Wigmore-street, W.), showed a wide range of optical instruments and ophthalmoscopes, and also a new crystal material for spectacle frames, folding spectacles, and the Full-Line reading glass.—(39) T. Hawksley, Ltd. (Woodstock House, 10, James-street, Oxford-street, W.), showed various aids for the deaf, especially a Portable Marconiphone Otophone, with two standard amplifying valves, outside controls, and standard batteries.—(38) Hawksley and Sons, Ltd. (83, Wigmore-street, W.), had a display of sphygmomanometers and instruments for blood diagnosis; and they specially pointed out their new microscopes, Cooke-Hawksley model, their hæmoglobinometers with solid glass standards, and the new Kompak baumanometers.—(121) C. J. Hewlett and Sons, Ltd. (35-42, Charlotte-street, E.C.), exhibited a new surgical instrument tray whose compartments have sloping sides so that the instruments can readily be located by touch in a cloudy fluid.—(17) Hinders, Ltd. (174, 192, Estcourt-road, S.W.), showed all-British metal foot supports of various kinds, and Hygia-Plast, zinc-oxide and rubber adhesive strapping packed in an air-tight, dust-proof patent container, with a mechanism for quick unwinding, and also a master spool into which new rolls can be inserted as required.—(2) The Holborn Surgical Instrument Co., Ltd. (26, Thavies-inn, Holborn-circus, E.C.), among their selection of surgical instruments and hospital furniture, showed the Holborn No. 4 General Operation Table, an inexpensive model on a pedestal pump base, with nickel-plated accessories; tubular steel consulting-room furniture; the "Fifteen Shilling" Aurolite and the "Fifteen Shilling" Headlamp; the Silex light-carrying stems for mouth mirrors, and electric rectoscope and pistol syringe for the injection of hæmorrhoids.—(110) The Inhaling Drug and Apparatus Co., Ltd. (87, Eccleston-square, S.W.), demonstrated their apparatus for inhalation therapy. —(143) Johnson and Johnson (Gt. Britain), Ltd. (Slough, Bucks), had a new extra-supple catgut for giving greater strength in the second knot; their well-known K.Y. Jelly, a lubricant; and a new contraceptive, Ortho-gynol, an occlusive jelly with spermicide in it; this is marketed only to the medical profession and to the public by prescription, and is put up in a tin tube, special precautions being taken to prevent contamination with tinfoil.—(137) J. F. Macfarlan and Co. (32, Bethnal Green-road, E.) showed their well-known anæsthetic ether and chloroform, in bulk and in capsules, for labour work.—(156) Medical Surgical Sundries, Ltd. (97, Swinderby-road, Wembley), showed a variety of useful apparatus, including emergency and midwifery cases and bags of all types; thermometers, syringes, and stethoscopes. Their Esseff modern inhaling apparatus can be used in the patient's own home.—(92) Monsol, Ltd. (Vincent House, Vincent-square, S.W.), had their various antiseptic preparations on view, and particularly pointed out a new waistcoat-pocket size packing of throat pastilles, which has been produced at the request of medical men.—(57) Pearson's Antiseptic Co., Ltd. (61, Mark-lane, E.C.), in addition to Iodine Medol ointment and Creolin, have marketed a new analgesic ointment, composed of menthol with oil of wintergreen, oil of rosemary, and capsicum, with a special emulsifiable base which leads to rapid absorption and deep penetration; it is recommended for rheumatism, neuritis, and allied conditions.—(18a) The Proseldis Chemical Co. (Harman Freese, 32, Great Dover-street, S.E.) showed various contraceptives, including Van der Velde's latest appliances. The watch spring used in the pessary is very fine and is encased in windings of piano wire so that even if it breaks no damage can be done. The band on the cervical cap is exceptionally elastic, and very thin condom film is used for all caps. They also market contraceptive jelly which is set up in special injection tubes, a new tube for each occasion, and Muiracithin, a new preparation for sexual neurasthenia.—(42) Portable X Rays, Ltd. (Power-road, Chiswick, W.), drew attention to their service for supplying X ray apparatus anywhere at any time, and showed a variety of X ray negatives, all taken under portable conditions.—(23) Rayner (Rayner and Keeler, 100, New Bond-street), among their ophthalmological and optical instruments, spectacles, and eye-glasses, pointed out the Tudor Thomas pocket ophthalmoscope.—(12) W. J. Rendell, Ltd. (161–165, Rosebery-avenue, E.C.), showed again the Rendell's birth control pessaries, which are now hygienically wrapped in waxed paper and tinfoil.—(51) Reckitt and Sons, Ltd. (40, Bedford-square, W.C.), showed Dettol, a new, non-irritant germicide, with a Rideal-Walker coefficient of 3·0. It is quite stable in blood and pus; instruments can be put in it and sterilised, and its effects last surprisingly long after application.—(24) W. H. Pettifor (11, Victoria-street, S.W.) showed the latest improvements in electrical aids for the deaf, especially a small model for a lady's hand-bag, and one- or two-valve wireless apparatus giving very great amplification with tone control.—(26) Salmon Ody, Ltd. (7, New Oxford-street, W.C.), demonstrated the value of their Spring Arch Support, which gives an elastic instead of a rigid relief to tired feet; and, in addition to their well-known Ball and Socket Truss, showed surgical belts and body bands fitted with zip fasteners that have a special lock so that they can be taken apart completely.—(28) Savory and Moore, Ltd. (incorporating John Bell and Croyden, 143, New Bond-street, W.), had on view their sterilised dressings, drums, and other aids to the surgeon.—(88) The Scholl Mfg. Co., Ltd. (188–194, St. John-street, E.C.), displayed their arch supports for the foot.—(62) A. G. Sheldon and Co., Ltd. (59, Weymouth-street, W.), showed the useful packages of surgical dressings in sterilised cases with which the profession is now familiar.—(66) T. J. Smith and Nephew, Ltd. (Neptune-street, Hull), presented again their useful Elastoplast adhesive bandage, of which a cloth form has recently been introduced to give increased support for sprains and in the after-treatment of varicose conditions. They also showed Elastocrêpe bandages and wrist straps; Semiplast; Cellona plaster-of-Paris bandage and medicated dressings.—(157) Sparklets, Ltd. (London, N.), in addition to their Sparklet Resuscitator for giving carbon dioxide and oxygen, showed a new Hygienator for treatment of the throat and other local applications.—(6) The Surgical Manufacturing Co., Ltd. (83–85, Mortimer-street, W.), showed a range of stainless steel surgical instruments; syringes; midwifery and surgical bags; and other apparatus for the surgeon, including a portable metal lithotomy couch which prevents the patient from rolling over.—(36a) Edward Taylor, Ltd. (Monton, Lancashire), had on view their range of Flexoplast bandages and adhesive plaster, particularly pointing out the flexible plaster dressing, ready for use, and special plasters of every kind.—(97) The Thermogene Co., Ltd. (160, Piccadilly, W.), had their popular medicated wadding on view.—(105) Waite's Antiseptic Local Anæsthetic (Cook Laboratories, Inc., New York, U.S.A.) showed their well-known local anæsthetic with the cartridge method of administration, and also the Solila stainless steel needles and Adco hypodermic syringes.—(43) John Weiss and Son, Ltd. (287, Oxford-street, W.), among their display of instruments, especially selected for notice•Wright's spinal needles and Harris's needles for trigeminal neuralgia treatment; Robin Paton's phalangeal burrs and bone nippers; and also a series of new instruments and apparatus for ophthalmic work.—(16) The Wilson Rubber Co., Ltd. (85, Buckingham-avenue, Slough, Bucks), showed their range of rubber gloves for all purposes, both domestic and surgical.

(*To be concluded*)



View of southern aspect of hospital. (From an infra-red photograph by Mr. A. L. Cranch.

LLANDOUGH HOSPITAL

THIS new municipal hospital was formally opened on Oct. 25th by Alderman John Donovan, chairman of the health committee of the Cardiff city council. It has long been realised that accommodation at the City Lodge Institution at Cardiff is inadequate for the needs of the city. In 1912 a site was purchased on high ground at Llandough by the Cardiff board of guardians, and a scheme was prepared for the building of a hospital, which was not then carried into effect because of the war. After peace was declared the scheme was revived and plans were submitted to the Ministry of Health for a hospital consisting at the outset of 340 beds but capable of expansion to approximately 900. An inquiry was held, conferences of the bodies directly concerned and of interested parties were held, and it was not until 1926 that an agreed scheme was prepared and sanctioned by the Ministry.

Tenders were then invited for the construction of the hospital, and in 1928 the Princess Royal laid the foundation-stone. The hospital is situated about three miles from Cardiff. The area of ground available is about 38 acres, of which approximately 20 will be covered by actual buildings. The hill on which the hospital is built commands a wonderful view, overlooking Penarth, Barry, and most of the Bristol Channel towards the south. On a clear day the Somersetshire and North Devon coasts can be seen and in the foreground the islands Flat Holm and Steep Holm in the Bristol Channel, the former containing the hospital set aside for cases of yellow fever and cholera.

The hospital is constructed on the pavilion system. It has two corridors and a basement corridor, each of which are 750 feet long, running from east to west. As will be seen from the plan the administrative block is situated in the centre with five ward blocks projecting south from the corridors. A ward block consists of ten ward units each to accommodate 34 patients, giving a total accommodation for 340 patients. Each ward unit has a main ward 80 feet by 24 feet containing 20 beds, the other 14 beds being accommodated in eight side wards: one with four beds, three with two beds, and four with one bed. Next to each bed in the side wards is a push-button connected with lights in the corridor, ward-kitchen, and main ward.

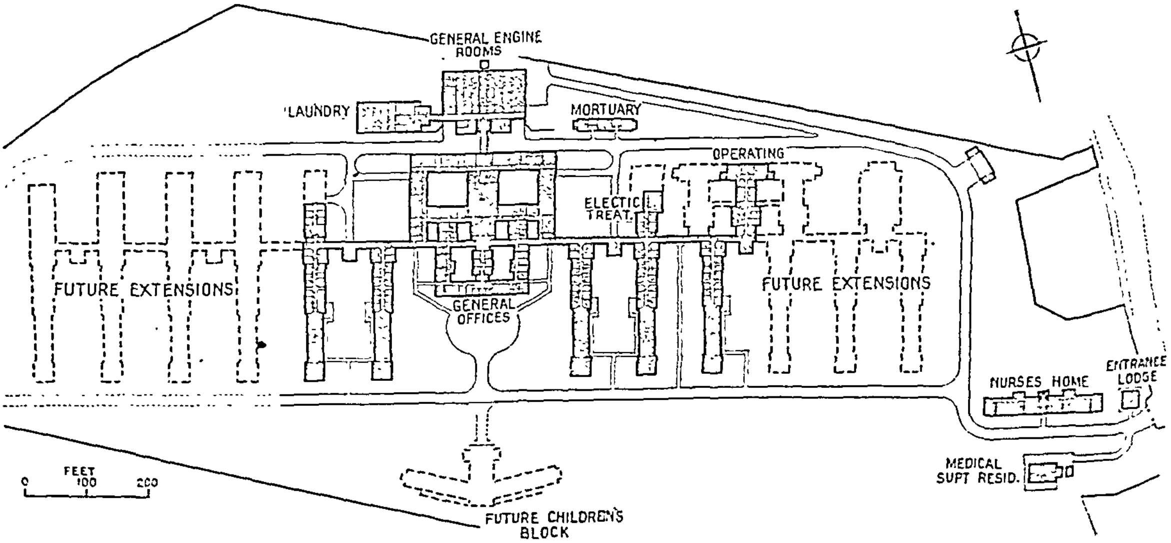
On the south end of each main-ward is a solarium fitted with glass permeable to ultra-violet light; the windows can be opened over their whole length when desired.

The beds in the ward units are finished with aluminium enamel, and include a substantial proportion of special bedsteads—viz., Fowler, cardiac, and fracture bedsteads. The bedside lockers have been designed so that the top can be swung round in front of the patient to act as a bed-table.

Each ward contains a built-in medicine cupboard, a bed-pan warming cabinet, a refrigerator, and a combined bowl and instrument steriliser.

Attached to each ward is a small clinical laboratory.

On the northern side of the corridor are the kitchen block and the X ray, theatre, and dispensary units. The nurses' home, the medical superintendent's residence, and



Ground floor plan of present buildings and future extensions.

the porter's lodge are situated on the eastern side of the hospital near the entrance gate. The separate pavilion style of hospital architecture has among other advantages that of eliminating noise from the individual ward unit, which is situated at a great distance from the activities of the kitchens, boiler house, and workshops. This and other features in the construction and equipment have been adopted by the health committee with a view to gaining the maximum quietness in the hospital generally. Thus the hospital is equipped with a staff signalling system of coloured lamps so as to minimise telephone bell-ringing.

The floors of the main X ray unit and ward corridors are covered with blue rubber; the walls are yellow, with green tiles round the windows.

The distribution of food and other requisites to the wards from the central kitchen and stores, and also soiled linen to and from the laundry, will be carried out by means of electric trolleys, and synchronised electric clocks are located in different parts of the building.

The administrative block contains offices, receiving rooms for male and female patients, and accommodation for resident medical officers and the matron, also biochemical and bacteriological laboratories.

The theatre or operating unit consists of two theatres with a common sterilising room for instruments, two anæsthetic rooms, changing rooms, a large sterilising room for dressings, dental and ear, nose, and throat examination rooms, and a plaster room.

The heating is by the so-called panel system, the lighting by shadowless lamps. In the event of the failure of the main supply of electricity, lamps from an emergency supply come on automatically.

X ray viewing boxes have been built in the walls of the theatres and plaster room.

The X ray unit consists of the X ray room, optical and developing rooms, and waiting-rooms. It has been equipped with up-to-date diagnostic apparatus, which is completely shock-proof, including a screening stand, a portable unit and two couches, one of which is of the tilting variety with an attached upright component for special radiographical examinations. Among the accessories are a drying cabinet for X ray films, a stereoscopic apparatus, a reducing camera, and a stand camera for clinical photography. This unit also includes one room set aside for electrotherapeutic purposes, and includes an ultra-violet ray lamp.

The kitchen block.—Steam is used wherever possible for cooking, supplemented by electricity, gas being used for boiling purposes only.

Separate rooms are provided for cold storage of milk, fish, and meat.

The nurses' home has five floors, with a trunk room in the basement. The ground floor is occupied by sitting-rooms, a lecture room, a classroom, cookery instruction room, and a library. There are 116 bedrooms, with a sitting room at the end of each corridor for sisters, and on each floor a combined kitchen and utility room for the private use of the nursing staff.

The boiler house and electrical sub-station, dispensary unit, laundry, mortuary, and garage are all excellently equipped.

ADMINISTRATION AND STAFFING

The hospital, although conceived and partly constructed by the Cardiff board of guardians, was appropriated under the Public Health Acts Amendment Act, 1907, by the Cardiff city council. On the medical side the resident medical staff fall into two categories—a senior permanent staff of two and three short-term resident appointments. The visiting medical staff will be in the main of the consultant type with charge of beds, the medical superintendent, Dr. D. G. Morgan, being in administrative control. Dr. Morgan also acts as medical officer to the City Lodge Hospital, ensuring close coöperation between the two institutions. The deputy medical superintendent is Dr. D. A. Williams.

It has been the policy of the council to appoint only recognised teachers of the Welsh National School of Medicine as consultants in their clinical institutions. Llandough Hospital, like the other council hospitals, will be available for the clinical instruction of students. The consultant staff will include a physician, two surgeons, a radiologist, two ear, nose, and throat surgeons, a physician for diseases of children, a gynæcologist, an anæsthetist, an ophthalmic surgeon, a pathologist, and a dentist.

It is not intended to set aside special rooms at the hospital for people in special financial circumstances, but, in accordance with the provisions of Section 16 of the Local Government Act, 1929, the city council will be under an obligation to recover from patients, or from persons legally liable for their maintenance, the whole or part of the expenses incurred, according to the financial circumstances of the persons concerned. An almoner is to be appointed in connexion with this work and for other duties.

PROPOSED USE OF ACCOMMODATION

In considering the allocation of the 340 beds at the new hospital for the different kinds of diseases, the experience at the City Lodge, the type of cases admitted, and those on the waiting-list of the Cardiff Royal Infirmary will be taken into consideration. The allocation of beds will be approximately as follows: children, 68; gynæcological, 34; medical, 102; surgical, including orthopædic, and ear, nose, and throat cases, 136. At the outset there will be no accommodation for maternity cases. It is thus hoped that the new hospital will materially solve the congestion problem at the City Lodge and do much to reduce the waiting-list of the Royal Infirmary.

The area to be served by the hospital will include that covered by the Glamorgan county council; it is probable that 20 per cent. of the accommodation will be allocated to patients from the county on the understanding that the county council will be responsible for the full maintenance cost of each of their patients, together with some contribution towards capital expenditure.

The *cost* of the whole scheme, including equipment, is estimated at approximately £387,000, made up as follows: land and foundations (including architects' fees), £55,000; superstructure (including architects' fees), £251,600; engineering contract (including kitchen and sterilising equipment and engineers' fees), £40,100; laundry, £11,900; general furniture and equipment, £24,900; layout of grounds, £3000.

The architects are Messrs. Willmot and Smith, the consulting engineers Messrs. Plevin and Jenkins, both of Cardiff, and the builders Messrs. S. C. Taverner and Co., Newport.

LONDON MEDICAL SOCIETIES

AT the opening of a new session we are again giving for the convenience of our readers the names of presidents and hon. secretaries of London medical societies, with the addresses at which they can be approached.

Royal Society of Medicine.—President: Mr. V. Warren Low. Hon. secretaries: Mr. C. W. Gordon Bryan and Dr. Anthony Feiling. Address: 1, Wimpole-street, W.1.

Medical Society of London.—President: Sir John Thomson-Walker. Hon. secretaries: Mr. Neil Sinclair and Dr. H. E. A. Boldero. Address: 11, Chandos-street, W.1.

Hunterian Society.—President: Mr. W. E. Tanner. Hon. secretaries: Mr. Andrew McAllister and Mr. M. H. Oldershaw. Address: 26, Upper Wimpole-street, W.1.

Harveian Society.—President: Lt.-Col. E. L. Gowlland. Hon. secretaries: Dr. Tom Hare and Dr. Macdonald Critchley. Address: Royal Veterinary College, N.W.1.

Royal Society of Tropical Medicine and Hygiene.—President: Sir Leonard Rogers, F.R.S. Hon. secretaries: Dr. C. M. Wenyon, F.R.S., and Dr. N. Hamilton Fairley. Address: Manson House, 26, Portland-place, W.1.

Royal Medico-Psychological Association.—President: Dr. Frank Douglas. Hon. general secretary: Dr. Reginald Worth. Address: The Secretary's Office, 11, Chandos-street, W.1.

Society of Medical Officers of Health.—President: Dr. Charles Porter. Executive secretary: Mr. G. L. C. Elliston. Address: 1, Upper Montague-street, Russell-square, W.C.1.

Tuberculosis Association.—President: Dr. Jane Walker. Hon. secretary: Dr. G. T. Hebert. Address: St. Thomas's Hospital, S.E.1.

British Institute of Radiology.—President: Dr. Stanley Melville. Hon. secretaries: Dr. R. Boulton Myles and Mr. G. E. Bell. Address: 32, Welbeck-street, W.1.

Medico-Legal Society.—President: Sir Bernard Spilsbury. Hon. secretaries: Mr. Ernest Goddard and Dr. W. G. Barnard. Address: 3, South-square, Gray's Inn, W.C.1.

London Association of the Medical Women's Federation.—President: Prof. Mary Lucas Keene. Hon. secretary: Dr. Annis Gillie. Address: 86, Porchester-terrace, W.2.

Medical Society of Individual Psychology.—Chairman: Dr. J. C. Young. Hon. secretary: Dr. F. G. Crookshank. Address: 57A, Wimpole-street, W.1.

Society for the Study of Inebriety.—President: Sir Humphry Rolleston. Hon. secretary: Dr. T. N. Kelynack. Address: 19, Park-crescent, Portland-place, W.1.

London Cancer Society.—President: Mr. Jocelyn Swan. Hon. secretary: Dr. A. J. C. Magian. Address: 144, Harley-street, W.1.

London Jewish Hospital Medical Society.—President: Dr. M. D. Eder. Hon. general secretary: Dr. Reuben Sacks. Address: 24, Skinner-street, E.C.1.

St. John's Hospital Dermatological Society.—President: Dr. J. M. H. Macleod. Hon. secretary: Dr. J. M. Spence Scovell. Address: 49, Leicester-square, W.C.2.

Chelsea Clinical Society.—President: Dr. Leslie Rawes. Hon. secretaries: Mr. Andrew Rugg-Gunn and Mr. Paxton Baylis. Address: 35, Harley-street, W.1.

Hackney Medical Society.—Chairman: Dr. C. E. Evans. Hon. secretary: Dr. Bernard Homa. Address: 20, Dalston-lane, E.8.

Hampstead Medical Society.—President: Dr. J. Herbert Dixon. Hon. secretaries: Dr. David Gillespie and Dr. James Fairbrother. Address: 29, Rosslyn-hill, N.W.3.

North London Medical and Chirurgical Society.—President: Dr. P. O. Ellison. Hon. secretaries: Dr. W. E. Snell and Dr. Kathleen H. Matthews. Address: Royal Northern Hospital, N.7.

North-West London Medical Society.—President: Sir Harold Gillies. Hon. secretary: Mr. Lionel M. Green. Address: 50, Brook-street, W.1.

Paddington Medical Society.—President: Dr. W. G. Bendle. Hon. secretary: Dr. Saul Crown. Address: 81, Elgin-avenue, W.9.

Priory Medical Society.—Hon. secretary: Dr. Alexander Archibald. Address: Seafield, 73, Shoot-up-hill, Cricklewood, N.W.2.

South-West London Medical Society.—President: Dr. George Pollock. Hon. secretaries: Dr. E. C. Housden and Dr. A. W. Wells. Address: 51, Longley-road, S.W.17.

West London Medico-Chirurgical Society.—President: Mr. H. Tyrrell-Gray. Hon. secretaries: Mr. G. B. Woodd Walker and Dr. G. L. S. Konstam. Address: 19, Queen Anne-street, W.1.

PUBLIC HEALTH SERVICES

The Medical Service of a Port

WHEN they were first established the principal and almost only function of port sanitary authorities was to prevent the importation of infectious disease; but like all other public health services port sanitation has developed enormously since then. In a Chadwick lecture delivered in London on Oct. 23rd, Mr. P. W. Coombe mentioned the following activities in which his own authority, the Port of London, is regularly engaged: (1) the prevention of the importation of infectious disease; (2) the prevention of the importation of rat plague; (3) the supervision of the hygiene of crew and passenger accommodation in ships; (4) the inspection of all classes of imported food; (5) the inspection and registration of canal boats; (6) the control of shell-fish layings; (7) smoke abatement; (8) the supervision of the general sanitary conditions of the port sanitary district; and (9) the carrying out of various international obligations in accordance with the International Sanitary Convention of 1926.

The port of London, he said, ends with the Tilbury dock group, 25 miles down river from the city. On the opposite side of the river is Gravesend, and here the work of the boarding medical officers is carried out. All vessels which report cases or suspected cases of infectious sickness or which have touched at infected ports are subjected to inspection by a medical officer before they are granted pratique and permitted to proceed up river. When a ship has berthed, whether in a dock or at a wharf, the work of prevention is taken up by the sanitary inspectors, all of whom hold a master mariner's certificate besides being fully qualified sanitary and food inspectors. The living accommodation of both passengers and crew is examined, and where necessary recommendations as to cleansing, repairs, and structural alterations are made.

An important part of the inspector's duty is a knowledge of the rat conditions of the vessels in his district. Often he is personally familiar with the history of the ships as regards rats, but if not he will have an international certificate of deratisation or exemption to guide him. In any case, to ascertain the condition of the ship at the time of his inspection he must proceed, in conjunction with his "assistant rat officer," to a careful examination of every compartment. When fumigation is necessary the inspector is responsible for its supervision, and international certificates of deratisation or exemption are issued in accordance with his reports.

Early Mental Treatment and the Out-patient Clinic

The early treatment of acute mania calls for little comment from the man in the street. "Lock him up" is the counsel of perfection for the relative, the practitioner, and the observer outraged by the culprit's lack of decorum in social intercourse. But whilst the man in the street visualises insanity in terms of elation or assault, the deeper tragedies of mental perplexity or loss of insight escape his attention. It was to detect such cases and to begin treatment at an early stage that the Mental Treatment Act of 1930 provided that out-patient clinics might be set up by each local authority. During 1932 more of these clinics were started, but there are still districts in which the obstacles to their establishment seem to have resided more in the pessimism of the promoting body than in an insurmountable external cause. These clinics, staffed by the physicians of the local mental hospital, have varied greatly in the number of cases that have passed through them, and these variations seem to have little relation to the size of the area they serve or to the proximity of large towns: 176 new patients have been seen at Cardiff with a total of 563 attendances; in the Isle of Wight 92 new patients were interviewed with 292 attendances, whereas at Brentford 88 new cases accounted for 136 attendances. In some industrial areas the clinic has not yet been started. For example, the superintendent of the Glamorgan hospital, who notes an increase in the melancholic cases admitted, has to report that difficulties have still prevented the establishment of two proposed clinics in his area. The superintendent of the neighbouring Abergavenny hospital believes that unemployment and its attendant anxiety accounted for some of the admissions to his hospital, though not as many as might be expected. From the figures given it is not possible to be clear how much really new ground has been covered. At Brentford over 50 per cent. of the cases were those in the local observation ward, and these attendances would presumably have occurred without the instrumentality of the new Act at all. At the same centre 12 per cent. were old patients of the hospital, and in other counties the interviews with patients absent "on trial" account for a fair proportion of the attendances. The service that the clinics serve in this connexion is admirable. A number of the entirely new cases have been attracted by the public notices of the clinics, but more in general have come through practitioners. Several superintendents bemoan the lack of interest shown by the general practitioner in the cases he has referred to the clinic or straight to the hospital once he has been relieved of responsibility. At the Hertfordshire hospital steps were taken to make the provisions of the Mental Treatment Act better known, and at the Devon hospital, for two years, invitations were sent to the general practitioner to ask him to come and see his patient "with the idea of breaking down the feeling of isolation." The superintendent of the York Retreat which takes only private patients finds similar apathy among practitioners. The hospitals, for their part, often fail to send prompt and adequate reports to the doctors of the progress of his patient. The factor which is most to blame in deflecting his interest however is his own belief in the inscrutability of mental disease, and for this the psychiatrist who taught him cannot be absolved from responsibility. When mental disease is made to appear to the student as a vital part of the curriculum, he will later, as a practitioner, go and see his cases, will discuss them with the hospital medical officers, and will refer those who seem abnormally distressed or a little peculiar to the newly established out-patient clinics at a much earlier date than he does at present.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 14TH, 1933

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 3 (last week 3); scarlet fever, 3939; diphtheria, 1248; enteric fever, 57; acute pneumonia (primary or influenzal),* 730; puerperal fever, 54; puerperal pyrexia, 125; cerebro-spinal fever, 18; acute poliomyelitis, 17; acute polio-encephalitis, 4; encephalitis lethargica, 10; continued fever, 1 (Battersea); dysentery, 14; ophthalmia neonatorum, 74. No case of cholera, plague, or typhus fever was notified during the week.

The cases of enteric fever were distributed over 21 counties and twice as many sanitary authorities as follows: Derby 2 (C.B. 1, Chesterfield R.D. 1); Devon 2 (Newton Abbot R.D. 1, Torrington R.D. 1); Durham 1 (Chester-le-Street R.D.); Isle of Ely 2 (Chatteris U.D.); Essex 5 (Colchester 3, Epping 2); Kent 5 (Ashford 1, Beckenham 1, Chatham 1, Chislehurst 1, Dartford 1); Lancaster 7 (Liverpool 3, Manchester 2, Preston 1, Litherland U.D. 1); Leicester 2 (Billesdon R.D.); London 4 (Hammersmith 1, Paddington 2, Wandsworth 1); Middlesex 4 (Edmonton 1, Enfield 1, Heston and Isleworth 1, Staines 1); Northants 2 (Northampton R.D.); Northumberland 7 (Gosforth 1, Prudhoe U.D. 2, Morpeth R.D. 4); Nottingham 2 (Sutton-in-Ashfield U.D. 1, Bingham R.D. 1); Salop 1 (Burford R.D.); Surrey 1 (Banstead); Sussex East 2 (Brighton 1, Hastings 1); Westmorland 1 (Kendal); Worcester 1 (C.B.); Yorks North Riding 1 (Whitby R.D.); West Riding 3 (Swinton U.D. 1, Thurstonland and Farnley Tyas U.D. 1, Hemsworth R.D. 1); Flint 2 (Prestatyn).

The number of cases in the Infectious Hospitals of the London County Council on Oct. 17th–18th was as follows: Small-pox, 6; scarlet fever, 2916; diphtheria, 1537; enteric fever, 31; measles, 380; whooping-cough, 172; puerperal fever, 27 mothers (plus 9 babies); encephalitis lethargica, 255; poliomyelitis, 7; "other diseases," 134. At St. Margaret's Hospital there were 16 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 3 (0) from enteric fever, 5 (1) from measles, 6 (3) from scarlet fever, 13 (2) from whooping-cough, 45 (9) from diphtheria, 87 (22) from diarrhœa and enteritis under two years, and 24 (5) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa 9 each occurred at Liverpool and Birmingham, 5 at Hull, 4 each at Leeds, Newcastle-upon-Tyne, and Sunderland, 3 at Nottingham. Manchester reported 1 death from enteric fever, Northampton 2. Three fatal cases of diphtheria were reported each from West Ham, Leeds, and Liverpool.

The number of stillbirths notified during the week was 283 (corresponding to a rate of 40 per 1000 total births), including 41 in London.

ATEBRIN IN THE PROPHYLAXIS OF MALARIA

Dr. M. Sliwensky, of Sofia, states (Arch. f. Schiffs- u. Tropen-Hyg., August, 1933, p. 389) that on a shooting estate in Bulgaria, on the lower Maritza, and surrounded by forest, the moist warm climate gave so much advantage to the anophelines that Dr. Ruseff, in medical charge, thought antimalarial measures should be taken, and that the best would be prevention by drugs. Up to mid-1931 quinine or quinine with plasmoquine were used. But when in October of that year the 20 persons on the staff were examined, nearly all were found to have large spleens; monocytosis was found in 14, benign tertian parasites in 2, malignant in 1, the hæmoglobin percentage being generally between 70 and 90. Thereupon, every day for seven days, after lunch and dinner, two tablets of plasmoquine co. were given to everyone; subsequent blood examinations were negative, only 6 had monocytosis, hæmoglobin percentages improved. When the autumn epidemic was becoming due something more was thought desirable, and on July 10th, 11th, and 12th everyone was given daily three tablets of atebrin (0·1 g.) and plasmoquine (0·01 g.), one after each meal, and for four weeks thereafter these three tablets were repeated every Wednesday and Saturday. The blood examinations on August 12th were negative. Prophylactic treatment was continued twice a week till the end of November, one-half of the staff getting on each day three tablets as before, the other half two tablets of atebrin (0·1 g.) only. Both groups were re-examined in January, 1933, when all blood films were negative, hæmoglobin values had gone up 20 per cent., 3 had slight monocytosis, only 8 had spleens enlarged, and that only slightly. No clinical inconvenience from this dosage of atebrin was observed. In the adjacent village of Kurtowa, with its 2200 inhabitants, 750 malarial cases were reported in 1932—an attack-rate higher than any reported in the army in India since the war—but no one protected by atebrin, with or without plasmoquine, was attacked. The result suggests that atebrin, 0·2 g. twice a week, may be an effective preventive even in a very malarious district.

OBITUARY

CHRISTINE MURRELL, M.D. Lond.

Christine Mary Murrell, who died on Oct. 18th, was born at Clapham in 1874. She was an only child of Charles Murrell and the only grandchild in a well-to-do family who held liberal views. The ambition of two generations was thus focused upon her career. From an early age she was trained to be observant and to take an intelligent interest in the affairs of the world. Her grandfather used to encourage her to stand on a stool before him and recount the events of the week. Her schooling at Clapham High School and her home background were designed to educate her for a public as well as for a professional life, and her career is a tribute to their success.

DR. CHRISTINE MURRELL

[Photograph by Dorothy Wilding

Christine Murrell entered the London School of Medicine for Women in 1894 and qualified M.B., B.S. in 1899. She was the second woman to hold the post of house physician at the Royal Free Hospital, later becoming medical registrar. She then took up an appointment as clinical assistant at the Northumberland County Asylum; this stimulated an interest in early mental disease, which never flagged throughout her years in practice, and it was in the branch of mental diseases and psychology that Dr. Murrell took the M.D. degree in 1905.

While students together, Dr. Murrell and Dr. Honor Bone found that they shared an ambition to found a practice in the West End of London. There were at that time a few women consultants, and several practitioners were established in working-class districts; but little or no general practice was being undertaken by women in residential districts. They set up together in Bayswater, and their successful pioneer work in developing a large practice has contributed in no small part to the stability of women in the medical profession.

Dr. Murrell entered the profession at a time when her seniors had blazed the trail. She set herself to show that medicine was not only a possible career for girls but could actually provide a competent woman with a sound financial and social position, and the opportunity, if desired, to do important public work. Her enthusiasm for her profession, together with natural warmth of feeling and untiring energy made her unsparing of time and trouble in giving helpful advice to younger women. She was at one time president of the Medical Women's Federation, and was largely responsible for the foundation of the loan fund which the Federation made available for the use of junior medical women starting in practice. Among her professional interests infant welfare was prominent. She took charge of one of the first two infant welfare clinics to be formed by the St. Marylebone Health Society and worked for nearly 20 years for this society, being appointed honorary consulting physician on her resignation from clinic work.

Dr. Murrell took an active interest in the militant movement for women's suffrage, though never herself seeking arrest. During the war she was chairman of the Women's Emergency League and was attached to a division of special constabulary, receiving special mention for her services during air raids.

In 1919 she first entered upon the medico-political activities for which she is chiefly known. She became a member of the central council of the B.M.A. in 1924 after serving on various standing and special committees of the Association. At the time of her death she was chairman of the Kensington division. She was appointed by the Ministry of Health to serve on the General Nursing Council which held office until the end of 1932, and was about to take her seat as the first woman member of the General Medical Council in November, 1933, having been elected as one of three direct representatives of the practitioners of England and Wales.

Dr. Murrell had especial gifts for committee work—whether as member or chairman. She had a clear mind and knew when to emphasise the essential point of the matter under discussion and when to allow some latitude to speakers. Her untimely death is a loss to the whole profession, especially at a time when her ripe experience was to be made available to its governing body.

Lady Barrett writes: "Dr. Christine Murrell was professionally an example of the best type of general practitioner—prophylactic in her advice and conservative in the use of drugs. Her knowledge of modern facilities for diagnosis and treatment was kept up to date, and in regard to both she could be relied upon to secure the best specialist help when her patient's case required it. For many years she herself had been a pioneer in infant welfare work, but the psychological side of medicine was her special interest. Perhaps with all her qualifications she might have failed to achieve outstanding success had it not been for her cheerful, vital personality, which gave her patients a sense of safety and an assurance of recovery. Needless to say she became the friend of many women, as well as their medical adviser. Apart from medical work—the thing that struck one in conversation with Christine Murrell was her intellectual honesty. Knowledge to her had very sharp outlines, and she knew quite well and clearly where she agreed or disagreed with the ideas or opinions of another. She would not depart in one iota from what was, to her, the truth. 'I do not deny that I may be wrong,' she would say, 'but this is how I see it, and this is what I believe to be true.' The various causes in which she took a prominent part, e.g., women's suffrage, the election of women to Parliament, the removal of disabilities from women's work, an open door for women in the pursuit of medical studies—all proclaim her an ardent feminist, but to those who knew her, it was clear that this did not arise from sympathy with women as against men, but from her keen sense of justice and her desire to remove unfair handicaps in the race of life. She was a woman of quick and generous sympathies, a fighter to the death to right a wrong, a loyal friend and a gay companion."

DONALD J. ARMOUR, C.M.G., M.B. Lond., F.R.C.S. Eng.

SENIOR SURGEON, THE NATIONAL HOSPITAL, QUEEN-SQUARE

THE death occurred on Monday last in sadly dramatic circumstances of Mr. Donald Armour, the well-known neurological surgeon. He was present in his capacity as honorary treasurer at a council meeting of the Medical Society of London, and manifested no appearance of illness; he submitted his official report, but on resuming his seat was taken suddenly ill, and died immediately.

MR. DONALD ARMOUR

[Photograph by Russell

Donald John Armour, the descendant of a well-known Canadian family, was the son of J. D. Armour, Chief Justice of Ontario. He was born in 1868 at Coburg and educated at Upper Canada College and the University of Toronto, and at both showed the promise which he afterwards fulfilled. On deciding to enter the medical profession he became a student at University College, London. He graduated as M.B. Lond. with honours in 1894 and took the M.R.C.P. three years later, having obtained the English double qualifications. Turning to the surgical side of the profession, he obtained the diploma of F.R.C.S. Eng. in 1900, and held the post with success of senior demonstrator of anatomy at University College medical school. He there attracted the favourable attention of Sir Victor Horsley, the recognised pioneer in this country of neurological surgery, and came to assist Horsley regularly in his operations. He was appointed assistant surgeon to the National Hospital, Queen-square, and his work became largely centred on that hospital, but he held other appointments as a general surgeon, for he was on the staffs of the West London, the Italian, and the Belgrave hospitals, and at all of these was welcomed as an energetic and competent colleague. He soon obtained a large practice as a consultant, and gained much public and professional recognition. He delivered the Arris and Gale lectures at the Royal College of Surgeons of England in 1904–05, choosing for his subject the pathology and surgery of the Gasserian ganglion, and in the following year gained the Jacksonian Prize for his essay upon morbid growths of the vertebral column, spinal cord, and canal in special reference to their amenity to operation.

In 1908, as Hunterian professor, he delivered lectures at the College on the surgery of the spinal cord and its membranes. Armour selected only certain material for discussion out of the vast field indicated by the title, devoting one lecture to spina bifida, one to fracture-dislocation of the spine in so far as it relates to injury of the spinal cord, and one to tumours of the cord. The lectures were held to be a valuable exposition of the difficult topics. He contributed over a long period many papers on head injuries, abdominal surgery, and the surgery of the nervous system to the medical journals and the transactions of the medical societies, and in the "System of Treatment," edited by Latham and English, he wrote the articles on surgical diseases on the scalp, the cranium, the meninges, the brain, and the spinal column and cord, over which large range he displayed a familiarity with his subjects which enabled him to point out the therapeutic lessons with clearness and simplicity.

Armour was president of the West London Medico-Chirurgical Society in 1927, and in 1929 was president of the Medical Society of London. His association with this Society, in whose offices his life was so abruptly ended, was a close one. He regularly attended the meetings and contributed to the debates, and like other occupants of the chair, when he attained to the presidency, he was particularly alive to the position of the Society as alike dignified, old, and progressive, and he filled the office in that spirit. He delivered the Lettsomian lectures of the Society in 1927 on the surgery of the spinal cord, these well written and fully illustrated papers being published at the time in THE LANCET. They showed alike his accurate anatomical knowledge and his wide acquaintance with the literature of the subjects. In his presidential address to the Society he bore testimony to his affection for it, for he summarised the work of Lettsom's contemporaries in an essay that will often be quoted for its historical facts.

In 1929 he was president of the neurological section of the Royal Society of Medicine, and in 1930–32 was president of the Association of British Neurological Surgeons. During the war Armour was attached as surgeon specialist to numerous military hospitals with the rank of hon. Lieut.-Colonel R.A.M.C.; he was mentioned in despatches, and in 1918 was appointed C.M.G.

In private life Armour was deservedly popular. He was generous and kind. He was widely read, as elaborate references in his numerous publications showed; he was a genial debater and a fluent public speaker, when his humour lost nothing from a certain native pronunciation which he always kept, though his life from boyhood was passed in England. He was a stalwart friend, and anything which seemed to him to detract from the fame of his bygone chief Victor Horsley, as pioneer or exponent, would immediately draw from him a detailed refutation.

He married Louise, daughter of Captain O. M. Mitchel, an officer in the United States Army, and leaves a widow, one son, and two daughters.

DAVID MILLER MUIR, M.A. Camb., M.R.C.S., D.M.R.E.

Dr. Muir, who died suddenly of heart failure at Exeter on Oct. 18th, aged 46, was well known in the west of England as a radiologist. He had made it his special task to bring the X ray and radiological department at the Royal Devon and Exeter Hospital to a high state of working efficiency. He was the son of David Temple Muir, was born at Ealing, and after matriculating from University College School he went on to Trinity College, Cambridge, where he worked under Sir J. J. Thomson in the Cavendish Laboratory when the possibilities of radiation, but not its dangers, were beginning to be recognised. During the war, having completed his medical qualification at St. Bartholomew's Hospital, he became surgeon-commander in the Royal Navy, attached to the *Bellerophon*. On demobilisation he joined the late Dr. J. D. Harris in partnership at Exeter, and in 1922 succeeded him as chief of the hospital department. He became a trustee of the Devon and Exeter Cancer Fund at the time when a sum of £11,000 was collected for the purchase of radium, and he was consulting radiologist to the county and city mental hospitals. Dr. Muir was a man of unbounded energy, entering with equal zest into motoring, wireless transmissions, or flying, and with faculties of sympathy and understanding which endeared him to a wide circle of friends and patients. He married, first, Ethel Mary, daughter of F. H. Livens, J.P., and had by her one son. His second wife, Eleanor Brooks Stirling, survives him with two sons, the second born after his death.

CORRESPONDENCE

NASAL INFECTION IN THE PSYCHOSES

To the Editor of THE LANCET

SIR,—Dr. McCowan's paper on this subject in your issue of Oct. 14th is of very great practical interest to a large section of medical practitioners, and by no means restricted to those who have the care of patients certified as of unsound mind. Minor degrees of mental disturbance are quite common in focal sepsis, and, although cases within the group of the psychoses may become grave with scant warning, in the great majority there is a prodromal period when recognition of the causal sepsis and its appropriate treatment would prevent culmination in degrees necessitating certification. It was when I was a junior medical officer at Winson Green Mental Hospital that I had my earliest lessons in the toxæmic factor in some of the inmates; for some years past Dr. T. C. Graves, at Birmingham mental hospitals, and the late Dr. Henry Cotton, of the New York State mental hospitals, have recorded many "cures" following "defocalisation." Now Dr. McCowan, in collaboration with Mr. A. A. Pritchard, consulting laryngologist, and Dr. H. A. Scholberg as his pathologist, has achieved some striking successes.

Obviously it is only in pathological states consequent on toxæmia that these methods of treatment are of such value. But only fuller experience and scientific research can enable us to arrive at reliable statistics indicating the percentage of certified cases that are amenable to relief, and return to normal mentality by means of these methods. They may perhaps be even more valuable in preventing definite mental aberration in cases met with in daily practice.

I am, Sir, yours faithfully,

PATRICK WATSON-WILLIAMS, M.D.

Clifton, Bristol, Oct. 20th, 1933.

"A NEW TECHNIQUE IN GASTRO-JEJUNOSTOMY"

To the Editor of THE LANCET

SIR,—My attention has been called to an article on gastro-jejunostomy by Prof. D. P. D. Wilkie, which appeared in *Surgery, Gynæcology and Obstetrics* in January, 1929. In it there is a reference to the transomental approach. Before I wrote my article with the above title, one of my colleagues and myself had searched through the indices of medical literature as diligently as we could for any such reference and failed to find it; and I had never seen the method employed until I did it for myself. It goes to prove once more the truth of the old saying that there is nothing new under the sun.

I am, Sir, yours faithfully,

IVOR BACK.

Park-square West, N.W., Oct. 23rd, 1933.

MEDICAL NEWS

University of Oxford

On Oct. 12th the degree of bachelor of medicine was conferred upon Morgan Howell Evans.

University of Cambridge

Pinsent-Darwin Studentship in Mental Pathology.—An election to this studentship, which is of an annual value of about £225 and is tenable for three years, will be made in January, 1934. The student must engage in original research which has a bearing on mental defects, diseases, or disorders, but may carry on educational or other work concurrently. Applications should be sent before Jan. 1st, 1934, to the secretary of the studentship at the Psychological Laboratory, Cambridge. No testimonials are required, but applicants should give the names of not more than three referees.

On Oct. 20th the following degrees were conferred:—

M.D.—Lawrence Lawn * and H. P. Nelson.

M.B. and B.Chir.—G. W. Crimmin,* W. A. Elliston, and G. W. Thomas.

M.B.—Elchon Hinden, G. A. W. Whitfield, C. O. Barnes, K. V. Earle, Frank Radcliffe, and J. S. S. Fairley.

B.Chir.—H. B. Tipler,* G. O. A. Briggs,* Henry Barcroft, R. J. V. Battle, E. T. W. Starkie, D. W. C. Gawn, A. W. Langford, and E. L. Cohen.

* By proxy.

Epsom College

St. Anne's Scholarship.—The council of Epsom College will shortly elect a girl to a St. Anne's scholarship of £120 a year, tenable at some approved girls' boarding school. Candidates must be at least nine and not more than twelve years old on July 30th, 1934, and must be orphan daughters of medical men who for not less than five years have been in independent practice in England or Wales. Application must be made by Dec. 16th, 1933, on a form to be obtained from the secretary of the College, at 49, Bedford-square, London, W.C.1.

University of London

Three lectures on Helium Researches will be given in the chemistry lecture theatre of the Imperial College of Science and Technology, South Kensington, S.W., by Prof. Fritz Paneth, director of the chemical institute of the University of Königsberg, at 5.15 P.M., on Tuesdays, Nov. 14th, 21st, and 28th.

Royal College of Surgeons of Edinburgh

At the annual meeting of the College held on Oct. 18th the following office-bearers were elected for the coming year: president, Dr. A. H. H. Sinclair; vice-president, Mr. J. W. Dowden; secretary and treasurer, Mr. J. W. Struthers; librarian, Dr. D. M. Greig; convener of the museum committee, Dr. A. Logan Turner; representative on the General Medical Council, Mr. Alexander Miles; members of the president's council, Mr. Henry Wade, Mr. W. J. Stuart, Mr. George L. Chiene, Dr. J. S. Fraser, Mr. J. M. Graham, and Dr. R. W. Johnstone.

At the last meeting of the College, Mr. John Wheeler Dowden, president, in the chair, the following 35 successful candidates (out of 89 entered), who passed the requisite examinations between July 6th and 15th, were admitted as Fellows:—

William Gillies Annan, M.B. Edin.; Henry Bernard Bagshaw, M.R.C.S.; Gertrude Cicely Banks, M.R.C.S.; Leslie Nelville Burnett, M.B. N.Z.; Geoffrey Thomas Willoughby Cashell, M.R.C.S.; Lewis Frank Day, M.R.C.S.; Robert Evans, M.B. Belf.; Henry William Farrell, M.B. Dub.; Robert Gardiner, M.B. Glasg.; Warren Gamaliel Harding, M.D. (U.S.A.); Wilfrid Wynne Jeudwine, M.D. Camb.; Herbert Oswald Johnston, M.D. Melb.; Harold Benjamin Louis Levy, M.B. Durh.; Innis Mary Macdonald, M.B. Toronto; Kenneth Somerled Macdonald-Smith, M.B. Edin.; Samuel Andrew McFetridge, M.D. Manitoba; James Arnold Noble, M.B. Edin.; Malcolm Murray Parker, M.B. Edin.; Susanne Jean Paterson, M.B. Edin.; Samuel Pinkinsky, M.B. Edin.; James Alexander Price, M.B. Belf.; May Winifred Ratnayeke, M.R.C.S.;

William Robert Sloan, M.B. Belf.; Hamish Gordon Somerville, L.R.C.P. & S. Edin.; Harold Algar Sweetapple, Ch.M. Sydney; George Macdonald Thomson, M.B. Sydney; Ian Bowman Thorburn, M.B. Glasg.; Alfred Clough Turner, M.B. Belf.; Edward Baden Watson. M.B. Otago (N.Z.); Donald Kenneth Weston, M.R.C.S.; Charles Skinner Williams, M.B. Otago (N.Z.); Leslie Sheffield Williams, M.R.C.S.; Neville Pickernell Wilson, M.B. Melb.; Henry George Wyatt, M.B. Lond.; and Man-Kwong Yue, M.B. Hong-Kong.

University of Glasgow

On Oct. 21st the following degrees were conferred:—

M.D. (with high commendation).—A. L. Dunlop. *(With commendation.)*—W. L. Forsyth (in absentia), E. E. Henderson, A. C. Morrison, J. A. Montgomery, and Margaret T. Tindal. *(Ordinary degree).*—R. S. Donaldson, Lillias B. Hardie, J. F. Lang, and K. M. Rodger (in absentia).

M.B., Ch.B. (with commendation).—J. C. Dick H. B. Muir, Samuel Lazarus, J. D. Fraser, A. P. Robertson, J. B. Macdonald, F. E. Crawley, and John Hutchison. *(Ordinary degree.)*—Alastair Allan, Margaret H. G. Anderson. T. G. Anderson, J. N. Balaskas, Harold Baytch, Moira S. Beaton, J. A. Bentham, Agnes W. Black, N. B. Bluestone, W. L. Broadfoot, A. F. Brown, J. T. Brown, W. T. Buckle, John Campbell, Christina A. Crawford, J. A. Crocket, W. M. Cross, Edith M. Dickson, J. B. Donald, Barbara T. M. Douglas, Ibrahim Al El Korashy, E. J. Emery, Douglas Fairley, J. A. Finegan, May E. M. Fleming, Nathaniel Frank, T. N. Fraser, Jane O. French, H. A. Gibb, James Gilchrist, Agnes R. S. Glover, W. I. Gordon, J. M. Henderson, H. L. Henriques, J. C. Hogarth, J. S. Hogg, R. J. G. Hogg, D. F. Irvine, J. A. D. Johnston, J. S. Judge, J. A. Kilpatrick, William Lamont, R. McM. Latta, D. K. Lennox, E. P. Lynas, J. P. McK. McCarey, D. A. McCracken, F. C. McElwee, J. M. McEwan, William Macfarlane, Ogilvie Macfeat, D. L. Mackenzie, Andrew McLaren, H. McL. McLaren. Margaret B. MacLean, Mary M. Macphail, James Marshall, W. E. Mathie, A. L. R. Mayer, A. G. Miller, T. C. McD. Morrison, A. J. Muir, W. R. Muirhead, H. S. Murray, J. M. Naftalin, Alick Osofsky, J. P. J. Paton, W. W. Pollock. William Reid, Mary McL. Richmond, John Ryder, A. L. Schofield, Thomas Scott, Jacob Shafar, Joseph Sluglett, A. C. Stevenson, R. A. Strang. W. C. Templeton. J. G. Thomson, G. B. Wallace, G. L. Webster, Catherine H. Wright, and J. B. Young.

The Brunton memorial prize, awarded to the most distinguished graduate in medicine of the year 1933, and the West of Scotland R.A.M.C. memorial prize have been awarded to Dr. Gilbert Forbes.

Royal College of Physicians of Ireland

At the annual meeting of the College held on Oct. 18th the following appointments were made for the coming year: president, Dr. F. C. Purser; vice-president, Dr. William Boxwell; censors, Dr. Boxwell, Dr. Bethel Solomons, Dr. C. J. Murphy, and Dr. E. T. Freeman.

The British Institute of Philosophy

Sir Gowland Hopkins, F.R.S., will take the chair at a meeting to be held at University College, Gower-street, London, W.C., on Tuesday, Oct. 31st, at 8.15 P.M., when Prof. J. B. S. Haldane will deliver an address entitled Materialism. Tickets may be had from the director of studies, at University Hall, 14, Gordon-square, W.C.1.

The Institute of Micro-Biology

The council of this institute, 52, Bedford-square, London, W.C., announce an Insect (Fancy Dress) Ball to be held at the Dorchester Hotel, Park-lane, W., on Thursday, Dec. 7th, at 7.45 P.M. Those wishing to be present should address Miss M. F. Little, hon. secretary, at the office of the institute, 52, Bedford-square, London, W.C.

Interpretations of Progress

Five lectures with this general title will be given at the City Literary Institute, Goldsmith-street, Drury-lane, London, W.C., at 7.30 on Monday evenings from Nov. 6th. The individual subjects are economics (Mrs. Wooton), politics (Mr. Gerald Barry), science (Mr. A. S. Russell, D.Sc.), mind (Mr. Gerald Heard), and the use of the self (Mr. A. M. Ludovici). Application should be made to the head of the institute.

Mid-Staffordshire Medical Society

The opening meeting of the second session of this society was held at Stafford on Oct. 13th with Mr. Nesfield Cookson in the chair. The guest of the evening was Mr. Victor Bonney, and instead of giving a formal address he answered questions which were put to him by members. This resulted in an interesting meeting lasting several hours. Among other topics he dealt in some detail with puerperal sepsis. While encouraging the use of all precautions against extrinsic infection, including the wearing of masks, he maintained that the importance of intrinsic infection had hitherto been overlooked.

Medical Congress at Capetown

Some 450 medical practitioners from all parts of the Union of South Africa and from Rhodesia attended the twenty-seventh South African Medical Congress which opened in Cape Town on Sept. 26th. The congress was officially opened by Vice-Admiral E. R. G. R. Evans, commander-in-chief of the African Station, who recalled the part that doctors had played in the history of the Navy and of maritime expeditions. Dr. E. B. Fuller, president of the congress, developed the thesis that under the influence of disease the imaginative and superstitious heritage of mankind came to the surface.

Dr. T. Lindsay Sandes, president of the Federal Council, presented Dr. A. J. Orenstein with a gold medal for meritorious services to the Medical Association of South Africa. The medal, he said, was awarded not so much for Dr. Orenstein's ability and service as for the unfailing interest and enthusiasm he had always shown on behalf of the medical profession in South Africa.

Association of Anæsthetists of Great Britain and Ireland

The annual general meeting of this association took place on Oct. 20th at the rooms of the Medical Society of London, when Dr. H. W. Featherstone, president, presided over a large number of members. The report of the council showed that during the past year the advice and help of the association had been sought on various occasions in connexion with the status and remuneration of anæsthetists in hospital and other practice in various parts of the country, and reference was made to the part which the association had played in connexion with the L.C.C. part-time service. The treasurer's report disclosed a satisfactory financial condition with substantial balance in the bank.

Dr. Howard Jones brought forward the question of anæsthetics in obstetric work, and a full discussion took place regarding especially the manner in which this might be provided for those women who are attended solely by midwives. Finally Dr. Probyn Williams moved, and Dr. Kirkby Thomas seconded, the following resolution which was unanimously carried: "That this general meeting of the Association of Anæsthetists of Great Britain and Ireland views with concern any increase in the administration of anæsthetics by unqualified persons as a danger to the public, and hopes that if the practice is to be extended to midwives, it will only be allowed under strict regulations and after adequate instruction."

Chelsea Clinical Society

The opening of the new session was celebrated by a dinner at the Rembrandt Hotel on Oct. 18th, with Dr. Leslie Rawes, the president, in the chair. Sir William Bragg, O.M., proposing the toast of the Society, said that like others of its kind it sprang from the members' desire to talk over problems and difficulties with their colleagues. The Royal Society had a similar origin and at first was itself almost a clinical society. Such gatherings were responsible for much of the advance made, and all purely scientific people held them in very special respect. Physicists in particular, he said, were proud that more and more of the work done in physical laboratories was finding its contacts with the physiology of the body. The president, in his reply, spoke of the help which the discussions gave him in general practice. The Society's membership was now more than 200, and it was, he thought, the cheeriest and friendliest of all the London medical societies. Mr. Cecil Rowntree proposed the toast of the guests in a speech of mingled respect and abuse, and replies were made by Mr. Charles Billicocq (the French Consul-General), Sir Allan Powell, and Mr. Arthur Wimperis. Mr. Billicocq referred in warm terms to the services of Dr. Campbell McClure, Dr. Eckenstein, and other members of the Society to the French Hospital in London. Sir Allan Powell, in a speech touching lightly on nearly every subject under the sun, mentioned as an index of economic recovery the statement of a doctor that "these men who have nothing wrong with them are now coming back to me." And finally Mr. Wimperis delighted his hearers with an inimitable mixture of appropriate impropriety and charm.

London Hospital Medical College

The Liddle triennial prize for 1932–33, which was open to public competition for an essay on the causes and *differentiation of anæmias*, has been awarded to Dr. Janet Vaughan.

The Committee on Food Standards

As was mentioned in our last issue (p. 946) the departmental committee on the Composition and Description of Food has resumed its sessions. The chairman is Sir Frederick Willis, and the secretary Mr. W. J. Peete, of the Ministry of Health, to whom any communications should be addressed.

London School of Hygiene and Tropical Medicine

The first award of the Andrew Balfour studentship at this school has been made to Dr. G. M. Balfour, who is taking the course for the diploma in tropical medicine and hygiene. The first award of the Fishmongers' Company studentship in the public health class has been made to Dr. D. D. Payne, and the new Chadwick prize for the best student in the public health class has been divided between Dr. J. M. Henderson and Dr. B. O'Brien.

A Centre for Nurses and Midwives

The new headquarters of the National Birthday Trust Fund, the Queen's Institute of District Nursing, and the Midwives' Institute was declared open by Lady Hilton Young, on Wednesday last, Oct. 25th. A fine house, 57, Lower Belgrave-street, Westminster, has been taken and equipped for this purpose by Sir Julien Cahn, chairman of the Trust Fund. In addition to a lecture room capable of holding 200–300 people, there are offices for each of the three societies, and bedrooms and a club-room to form a hostel for the use of midwives.

Birmingham Dental Hospital

The presentation of medals and prizes awarded to students of the University of Birmingham dental school during the year 1932–33 was made at the Birmingham Dental Hospital on Oct. 12th by Sir John Robertson, professor of hygiene and public health in the university. Mr. Malcolm Knott, chairman of the surgical committee, who presided, said the progress of the school was continuous, and they could claim to be not only one of the largest provincial schools but one of the most successful. Students were gaining an experience which no other hospital or school in the kingdom could offer. During the year ten candidates sat for their final examination, eight in Birmingham and two for the diploma of the Royal College of Surgeons of England, and all passed. Sir John Robertson said that nearly the whole of his time, during the 50 years he had been a medical man, had been spent in preventing disease, and he felt very strongly that the dental profession as a whole was a great branch of preventive medicine. The teaching of people how to get and keep good teeth was much more important than anything else in dentistry, and he impressed on his hearers the importance not merely of being genial with patients but of telling them something about their teeth and digestive organs. A vote of thanks was accorded Sir John Robertson on the proposal of the dean, Mr. Cyril Howkins.

The People's League of Health

A luncheon was given at Claridge's Hotel, London, on Oct. 18th by Miss Olga Nethersole, as founder and honorary organiser of the People's League of Health, to meet its newly constituted veterinary council. Dr. C. O. Hawthorne, chairman of the council of the League, welcomed the representatives of the veterinary profession who had undertaken to serve on the new body when Sir Fredk. Hobday expressed the thanks of that body for the welcome extended to them. An interesting speech followed from Prof. T. J. Mackie, who considered the formation of a veterinary council to be a significant development in the activities of the League, having regard to the fundamental problems of milk-supply which awaited solution. He congratulated the League upon having performed valuable public service in surveying and reporting upon the position of the country with regard to bovine tuberculosis, and referred to a discussion on the milk-supply of the country which took place in the section of agriculture of the British Association at Leicester, in which he and Miss Nethersole had taken a part. He thought that the result was a verdict for compulsory pasteurisation, and that agricultural and public organisations were wrong in tacitly sanctioning the sale of raw milk. Prof. Basil Buxton deplored the fact that the vast majority of the public had no idea that there was safe milk available, and believed that when this knowledge was spread the supply of such milk would automatically increase. Pasteurisation, he admitted, had its merits, but it was necessary to have a clean supply of milk from the source. Sir Leonard Hill considered that pasteurisation would not lessen the nutritive quality of milk in any degree; Mr. G. P. Male stressed the need for helping the producer to free his herds from disease; and Major Rabagliati related the work which had been done in the West Riding of Yorkshire to obtain a clean milk-supply.

Interesting letters in respect of the institution of a veterinary council were received by Miss Nethersole from Lord Bledisloe, Sir Henry Dale, Lord Horder, Lord Moynihan, and others, while Dr. T. Carnwath and Mr. T. J. Kelland attended the luncheon representing respectively the Ministry of Health and the Ministry of Agriculture.

Vacancies

For further information refer to the advertisement columns

Birmingham and Midland Eye Hospital, Church-street.—Res. Surg. O. £200.

[illegible] —Res. M.O. £250.

[illegible] Res. M.O. £200.

[illegible] *Gray's Inn-road,* [illegible]

Charterhouse Rheumatism Clinic, 94, Hallam-street, W.—Hon. Asst. Physician.

Derby, Derbyshire Hospital for Women, Friar Gate.—H.S. At rate of £150.

Dudley, Guest Hospital.—H.S. £170–£200.

Durham County Hospital.—Two H.S.'s. Each £150.

Finchley Memorial Hospital, Granville-road, N.—Res. M.O. At rate of £150.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Hampstead, Queen Mary's Maternity Home, Heath-street.—M.O. 120 gns.

Hospital for Diseases of the Skin, 71, Blackfriars-road, S.E.—Registrar.

[illegible] Hon. Physician.

[illegible] . Ophth. Surgeon.

[illegible] *ng's Lynn General Hospital.*—

[illegible] *ngton, S.E.*—Asst. M.O. £350.

[illegible] *old.*—Jun. Asst. M.O. £200.

[illegible] Res. Anæsthetists. Each at rate of £150.

London County Council.—Part-time Assts. 30s. per session.

London University.—Sir William Dunn Chair of Pathology at Guy's Hospital. £1400.

Lowestoft, St. Luke's Hospital.—Asst. M.O. £350.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Res. H.S. £120.

Manchester, Northern Hospital for Women and Children.—Sen. H.S. £130.

Midhurst, Sussex, King Edward VII. Sanatorium.—Med. Supt. £1000.

National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Hon. Orthopædic Surgeon. Also Registrar and Asst. Registrar. Each £200.

Newport, Mon. Royal Gwent Hospital.—Asst. Hon. Surg. Also Hon. Anæsthetist.

Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital.—H.S. At rate of £200.

Port [illegible] —School M.O. £500.

Prin [illegible] *r Children, St. Quintin-* [illegible] Pathologist and Bacteriologist. [illegible]

Queen Mary's Hospital for the East End, E.—Hon. Asst. Radiol.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Royal Chest Hospital, City-road, E.C.—Res. M.O. and H.P. At rate of £150 and £100 respectively. Also Med. Reg. At rate of £50.

Royal Free Hospital, Gray's Inn-road, W.C.—Hon. Anæsthetist. Also Second Asst. Surg. to Ear, Nose, and Throat Dept.

Royal Northern Hospital, Holloway, N.—H.P. and H.S. Each [illegible]

St. E [illegible] n. H.S. £150.

[illegible] At rate of £80.

Sheff [illegible] thologist and Demonstrator of [illegible] Chair of Pharmacology.

[illegible] *tal.*—Jun. Res. M.O. £200.

[illegible] *ugh.*—Clin. Tuber. O. and Asst. [illegible]

[illegible] n.—Two Res. H.P.'s. At rate of £200.

[illegible] *mmersmith-road, W.*—Cas. O. £250.

[illegible] *d Infirmary and Dispensary.*—Hon. [illegible]

Willesden [illegible] *t Council.*—Ophthalmic Surgeon. 28 gns. per session.

Wolverhampton Royal Hospital.—H.S. for Orthopædic and Fracture Dept. At rate of £100.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon, at Northwich, Chester.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Oct. 31st.—8 P.M., PATHOLOGY. Laboratory Meeting at the Lister Institute of Preventive Medicine, Chelsea-gardens, S.W. Short Communications and Demonstrations. H. L. Schütze: Some Further Observations on *B. pestis* Antigen. W. T. J. Morgan and A. C. Thaysen: Decomposition of Specific Bacterial Polysaccharides by a Species of Myxobacterium. C. R. Amies: Further Experiments with Varicella Virus. G. Favilli and D. McClean: Influence of Testicular Extract on the Fragility of Red Blood Corpuscles. M. H. Finkelstein: An Improved Method for Obtaining Thick Suspensions of Elementary Bodies from Fowl-pox Lesions. D. W. Henderson: The Culture in vitro of Louping-ill Virus.

WEDNESDAY, Nov. 1st.—5 P.M., HISTORY OF MEDICINE. Prof. Burger (Amsterdam): The Doctor, the Quack, and the Appetite of the Public for Magic in Medicine. 8.30 P.M., SURGERY. Prof. George Gask: The Strategy of the Fight Against Cancer. (Presidential address.)

THURSDAY.—5 P.M., Prof. H. Burger: The So-called Associated Paralyses of the Larynx—Multiple Cranial Nerve Palsy. (Semon lecture.) 8.15 P.M., TROPICAL DISEASES AND PARASITOLOGY. Sir Aldo Castellani: Elephantiasis Nostras. Members of the Sections of Dermatology, Medicine, and Surgery are specially invited to attend and to take part in the discussion.

FRIDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Discussions. Vertigo. Labyrinthine Tests and their Aid to Diagnosis. Openers: Dr. W. Russell Brain and Mr. Alex. R. Tweedie. 5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) 8.30 P.M., ANÆSTHETICS. Dr. H. P. Fairlie: Anæsthesia in Gynæcology. (Presidential address.)

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Nov. 3rd.—8.45 P.M. (at the West London Hospital), Clinical and Pathological Meeting. Cases at 8 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

THURSDAY, Nov. 2nd.—5 P.M., Dr. C. S. Myers: A Psychological Regard for Medical Education. (Bradshaw lecture.)

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, Oct. 30th.—5 P.M., Mr. C. P. G. Wakeley: Specimens of Long Bones, showing the Processes of Infection and Repair (Museum demonstration).

FRIDAY, Nov. 3rd.—5 P.M., Mr. Wakeley: Specimens illustrating Gun-shot Wounds of the Skull and Brain.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 30th, to SUNDAY, Nov. 5th.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Course in Gynæcology. Mornings and/or afternoons.—CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, W.C. Course in Ophthalmology. Afternoons only.—CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C. Week-end Course in Obstetrics. All day Sat. and Sun.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Course in Diseases of the Nervous System (intended for general practitioners). All day.—PANEL OF TEACHERS. Individual clinics are available daily by arrangement with the Fellowship of Medicine. Courses, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

MONDAY, Oct. 30th.—10 A.M., Dr. Hutchison: Chronic Constipation in Infancy and Childhood. 11 A.M., Dr. Shires: The Use of Opaque Meals and Enemas in Diagnosis of Alimentary Disorders (X ray demonstration). 12 noon, Dr. Wyllie: The Epilepsies in Childhood (clinical demonstration). 2 P.M., Dr. Thursfield: Ward Visit. 3 P.M., Dr. Nabarro: Treatment in Meningitis.

TUESDAY.—10 A.M., Dr. Schlesinger: Cœliac Disease (clinical demonstration). 11 A.M., Dr. Ellis: Pulmonary Fi[illegible] (clinical and pathological [illegible]n, Mr. Browne: Treatment o[illegible]red Deformities of the Limbs [illegible] 2 P.M., Dr. Wyllie: Birth [illegible]ration). 3 P.M., Dr. Signy: The Diagnosis and Treatment of Poliomyelitis.

WEDNESDAY, Nov. 1st.—10 A.M., Dr. Poynton: Ward Visit. 11 A.M., Dr. Gray: Diseases of the Skin (clinical demonstration). 12 noon, Mr. Addison: Osteomyelitis or Ward Visit. 2 P.M., Mr. Apperly: Dental Caries (clinical demonstration). 3 P.M., Dr. Payne: The Bleeding and Clotting times in Hæmorrhagic Diseases (clinical laboratory demonstration).

THURSDAY.—10 A.M., Dr. Hutchison: Ward Visit. 11 A.M., Mr. Tyrrell-Gray: Clinical demonstration of Out-patients. 12 noon, Dr. Cockayne: Diarrhœa and Vomiting in Breast- and Bottle-fed Infants. 2 P.M., Dr. Thursfield: Ward Visit. 3 P.M., Dr. Nabarro: Bacterial Infections of the Bowel.

FRIDA[illegible] Pyloric Stenosis and P[illegible] 11 A.M., Mr. Barrington-W[illegible], Dr. Pearson: Disturbances of the Thyroid Gland (clinical demonstration). 2 P.M., Dr. Frew: Ward Visit. 3 P.M., Dr. O'Reilly: The Rheumatism Clinic (clinical demonstration).

SATURDAY.—10 A.M., Dr. Poynton: Ward Visit. 11 A.M., Dr. Paterson: The Feeding of Infants from the ninth month up to two years of age. 12 noon, Mr. Penman: Treatment of Squint in Children (clinical demonstration).

ROYAL INSTITUTION, Albemarle-street, W.

TUESDAY, Oct. 31st.—5.15 P.M., Prof. G. Elliot Smith: The Nervous System (second of four lectures).

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Nov. 3rd.—4 P.M., Mr. W. G. Scott-Brown: Œsophageal Obstruction.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 30th.—3.30 P.M., Dr. Greenfield: Chemistry of Cerebro-spinal Fluid.

TUESDAY.—Dr. D. Brown: Spinal Reflexes.

WEDNESDAY, Nov. 1st.—Dr. Collier: Clinical Demonstration.

THURSDAY.—Dr. Walshe: The Motor System.

FRIDAY.—Dr. B. Hart: The Psychoneuroses.

Out-patients' clinics each day at 2 P.M.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL Post-graduate Lectures.

WEDNESDAY, Nov. 1st.—4 P.M., Dr. H. M. Oddy: Purpura, its Causes and Treatment.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Nov. 1st.—4.30 P.M., Mr. R. H. Jocelyn Swan: Frequency of Micturition.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Chandos-street, W.C.

SUNDAY, Oct. 29th.—10.30 A.M., Dr. Russell J. Reynolds: Radiotherapy. Demonstration of Cases. 11.45 A.M., Mr. L. R. Broster: Surgical Emergencies.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Nov. 2nd.—4.30 P.M., Dr. G. F. Still: Prevention of Diseases in Infancy. 9 P.M., Dr. J. A. Drake: Intractable Skin Diseases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Nov. 1st.—4 P.M., Dr. C. E Lakin: Demonstration of Medical Cases.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Nov. 1st.—3.30 P.M., Dr. R. King Brown: Health in Winter.

ROYAL INSTITUTE OF PUBLIC HEALTH, 23, Queen-square, W.C.

WEDNESDAY, Nov. 1st.—4 P.M., Dr. D. H. Geffen: Citizenship and Parentcraft.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Oct. 31st.—5 P.M., Dr. H. MacCormac: Diseases Due to Animal Parasites.

THURSDAY, Nov. 2nd.—5 P.M., Dr. W. J. O'Donovan: Occupational Dermatitis.

CHADWICK PUBLIC LECTURES.

THURSDAY, Nov. 2nd.—5.30 P.M. (at Manson House, 26, Portland-place, W.), Dr. P. Flemming: The Sanitary Arrangements of the Medieval Monastery.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Nov. 2nd.—4.15 P.M., Mr. P. G. McEvedy: Examination of a Patient, with Special Reference to Acute Appendicitis.

LEEDS GENERAL INFIRMARY.

TUESDAY, Oct. 31st.—4 P.M., Prof. C. W. Vining: Diseases of Children.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate, Manchester.

WEDNESDAY, Nov. 1st.—4.30 P.M., Dr. Vernon Smith: Sinusitis: its Cause with Special Reference to Bathing.

MANCHESTER ROYAL INFIRMARY Post-graduate Course.

TUESDAY, Oct. 31st.—4.15 P.M., Dr. W. Fletcher Shaw: Medicine in America.

FRIDAY, Nov. 3rd.—4.15 P.M., Mr. A. H. Burgess: Demonstration of Surgical Cases.

GLASGOW Post-graduate Lectures.

WEDNESDAY, Nov. 1st.—4.15 P.M. (at the Western Infirmary), Mr. G. H. Edington: Treatment of Fractures and the Bone Lesions.

METHODS OF TREATING TUBERCULOSIS.—Dr. Peter Edwards, medical superintendent of the Cheshire Joint Sanatorium, near Market Drayton, Shropshire, is prepared to give a series of short intensive post-graduate courses on modern methods of therapy in tuberculosis of the respiratory system, with special reference to collapse therapy. Methods of sanatorium administration will also be demonstrated. No class will exceed four members in number, and those attending need not necessarily stay more than three days. Board and residence can be obtained within a convenient distance of the sanatorium. Further particulars may be had from the hon. secretary for post-graduate courses, Joint Tuberculosis Council, 8, Highway-court, Beaconsfield, Bucks.

NOTES, COMMENTS, AND ABSTRACTS

HISTAMINE IN RHEUMATISM

BY A. A. BISSET, M.D. ABERD.
AND
A. WOODMANSEY, M.SC., A.I.C.
HON. CONSULTING CHEMIST, ROYAL BATH HOSPITAL, HARROGATE

THE importance of circulatory disturbances in rheumatic disorders has recently attracted much attention. In 1928, by the courtesy of Dr. E. G. Pierce and Dr. R. Pemberton, of the Presbyterian Hospital, Philadelphia, one of us (A. A. B.) was shown the results of the classification of studies of the capillaries in patients attending their rheumatic clinic. Systematic observations of nail-bed capillaries were thereupon commenced, an account of which was afterwards published.[1]

The striking feature in nearly all examinations of rheumatic subjects was the spastic or attenuated condition of the capillaries. This suggested the presence of an abnormal vasoconstrictor substance or the lack of a normal vasodilator. Either factor might be expected to produce an imbalance and so affect the calibre of the capillaries. The dilator substance which had been most discussed in reference to the capillaries was histamine or the " H " substance of Lewis, who found[2] that if a dilute solution of histamine was pricked into the skin a flare was produced, followed in a measurable time by a wheal. We carried out tests to determine whether this response shown by normals was borne out in cases of various types of rheumatism. The sum total of the tests seemed to indicate that in these cases the response was less marked, delayed, or inhibited. It was then surmised that the normally occurring dilator was deficient, and substitution by artificial means was attempted in the form of medication with a histamine preparation.

Subsequent publications have shown that similar treatment has been independently given by Deutsch,[3] Jacchia,[4] Rosenbleuth and Ronald,[5] Bettmann,[6] Vas,[7] Burkardt,[8] Stark,[9] Schenck,[10] and Behrend.[11]

Three possible methods of introduction were available—viz., per os, by injection (intravenous, intramuscular, or subcutaneous), or by electrophoresis. Histamine by mouth is known to be ineffective. Intravenous injections have many disadvantages, notably the fact that in order to exercise the optimum effect the injection should be of the " drip " type. Hypodermic injections can give rise to untoward symptoms when it is too late to arrest their effect. Electrophoresis proved to be the most adaptable and agreeable to the patient, and a constant penetration could be obtained under absolute control. Moreover this method enabled an effect to be produced where symptoms were most localised, in addition to the systemic action reported by most other observers who have used the alternative means.

Histamine is an amine or organic base, and is supplied commercially in the form of its salt, the acid phosphate, A/1 : 5000 solution in distilled water is prepared. Any suitable source of direct current, such as the usual apparatus for administering " cataphoresis " treatment, may be used. The anode pad, consisting of several layers of lint, is saturated with the histamine solution, lightly squeezed, placed over the affected part, and the metal gauze or flexible lead electrode strapped on by means of rubber ribbon. Any ordinary electrolyte may be used for the cathode, which is similarly placed in contact with another limb or part of the body. The current is gradually brought to the required strength (say 10 milliamperes), according to the patient's reaction, and maintained for 10 to 20 minutes. By calculation from published data it may be assumed that approximately 0·065 mg. of histamine are transported per milliampere per minute towards and through the skin.

RESULTS

A reaction is observed at the positive pole, which differs in a marked degree from that observed when the usual drugs for cataphoresis are used, viz., potassium, lithium, or sodium salts. The area at that pole becomes erythematous and shows isolated patches of œdema, which gradually coalesce with continued treatment to form an extensive wheal marking the area of the electrode. A flare surrounds the wheal. The appearance after a large dose is alarming, but there is no actual pain. The wheal and flare last for several hours. There is a sensation of itching and irritation, which may usually be allayed by talcum powder. The reaction corresponds to that described by Lewis as the third phase of his triple response. Lewis describes this third phase as being due to the liberation of " H " substance and a resulting permeability of the local capillaries.

The wheal resulting from treatment is irregular in outline, with the irregular edges corresponding to the shape of the anodal pad. There is also a marked flush surrounding the area. If the application is over a painful area, as in osteo-arthritis of one of the smaller joints, there is a feeling of anæsthesia on joint movement, which usually persists for several hours. Similar results are apparent on applications over painful muscle areas.

The results which have been obtained may logically be explained on the basis of an increased blood- and lymph-supply to the affected part. According to the dosage, the face and the parts of the skin usually exposed become red and flushed. Increased dosage gives a basal headache with a feeling of protrusion of the eyes, followed by a sharp splitting occipital headache and anginal pains of the chest. Sometimes a bitter taste is noticed. These latter symptoms are to be avoided. As they appear to be of a toxic nature Streicher[12] sounds a note of caution. Pickering and Hess[13] state that headache begins about 40 seconds after an intravenous injection of 0·1 mg. of histamine, but passes off in six to ten minutes. In treatment by electrophoresis this headache can always be arrested immediately by decreasing the current. Its onset can be obviated by reducing the current when face flushing is observed. Various other changes capable of exact record occur during the treatment.

Blood pressure.—In most cases where the blood pressure was measured there was a fall in the systolic from 4 to 30 mm., and in the diastolic as much as 20 mm. decrease has been found. These cases were all about normal at the commencement of the treatment. No high pressure cases have yet been treated. In a few subjects the pressure remained fairly constant or rose. The generally accepted explanation of the effect of histamine on blood pressure is that the tone of the capillary walls is lowered and their permeability increased. Thus the larger vessels are depleted by peripheral stasis and considerable exudation of fluid into the tissue spaces. The mechanism of traumatic and surgical shock has been explained in terms of the supposed liberation of histamine from injured tissue. Weiss and others[14] found that with gradually increasing intravenous doses the systolic pressure of normals was essentially unaltered. The diastolic showed a slight tendency to fall. Subcutaneous injection usually caused a slight fall in both.

The pulse-rate.—In the majority of cases a slight steadying was observed, though in a small number there was an increase of up to 12 beats per minute. Weiss[15] found a slight increase in cardiac rate with minimal doses, greater with progressively increased amounts when introduced by the vein. The subcutaneous method caused a maximum increase of 10 to 20 beats. In both pulse-rate and blood pressure our findings cannot be said to support Weiss. This may be accounted for by differences in method of administration.

General temperature.—The patient rarely fails to experience a feeling of warmth, but this may be due partly, though not entirely, to the flushing of the face. The mouth thermometer showed an average elevation of 0·6° F. in 25 cases.

Skin temperature.—For this measurement the modern method of thermo-couple with galvanometer was used. A couple consisting of a fine nickel and constantan wire was constructed, and the exposed soldered junction stretched over a small cork, the remainder being protected by rubber tubing. The opposite (" cool ") ends of the couple were attached to flexible copper wire, in proximity to a thermometer which was connected through a reverse pole-switch to a microamperemeter. By means of a thermostatic water-bath the apparatus was calibrated so that one division of the scale represented n° C. temperature difference to be added to the thermometer reading. The old method of taking skin temperature, using a flat-bulbed mercury thermometer, required at least five minutes to obtain anything like a constant reading, and even then one could not be satisfied that the correct temperature had been recorded. Owing to the low specific heat of the exposed end of the thermo-couple an application of a few seconds' duration is sufficient to give an accurate reading.

Measurements of temperature on and around the site of the applied histamine (anode) pad gave an average increase equivalent to 1·69° C. after treatment. The negative site generally showed a slight decrease. Our results confirm Wright [16] when he states that subcutaneous injection produces a rise of 1° to 2° C., but Weiss in the paper quoted found that intravenous application often gave no elevation or skin temperature. This perhaps may be claimed as a further advantage for electrophoretic administration of histamine in local conditions.

Capillaries.—Microscopic examination of the skin in areas other than that being treated shows some increase in the calibre of the capillaries, and also in the number visible. The blood flow is definitely accelerated, but it is difficult to measure the rate. There is also an increase of the intercellular lymph.

Urine changes.—Biochemical tests on the urine up to the present have been inconclusive.

CLINICAL NOTES

In the above work histamine treatment has been recognised as ancillary to rather than as a substitute for methods directed towards the general condition of the patient. These latter have included the usual spa treatment, involving internal and external use of medicinal waters by which metabolic functions in the widest sense may be improved.

In osteo-arthritis beneficial results have been obtained, especially where the smaller joints have been involved. Crepitus, pain, and restrictions of movement disappear after a few applications, but in the hips and vertebræ the results are less evident. In these cases repeated treatments at two days' interval are necessary before any alteration in the condition is seen. Lessening of the pain is first noticeable, followed by increase in the mobility.

Arthritis of the knees, probably owing to the possibility of surrounding the whole joint with the anodal pad, has shown the most marked and rapid improvement. The tissue swelling, however, is late in disappearing, but improvement continues after the discontinuance of the applications. Only two cases when the shoulder-joint was involved have had histamine applications, and both showed definite decrease of pain and increase of range of movement after three applications.

In chronic cases of articular gout benefits were very marked. Also in acute gout the duration of pain was shortened with small dosage along with other remedies. One patient, aged 84, with a history of repeated attacks, averred that a treatment avoided an oncoming flare-up. Considerable benefit ensues by the method in fibrositic muscular thickening when associated with ordinary massage. Some but not all cases of subchronic rheumatoid arthritis were improved. The peri-articular swellings in many cases were markedly decreased. The full effect of this decrease was not evident until several weeks after the end of the treatments. The movement of the joints also was benefited. In post-herpetic neuritis some easement of the pain was obtained after each application.

The most evident result to the patient, apart from some irritation, is a feeling of anæsthesia in the part treated. This continues for some hours, and if a painful joint, especially one of the smaller ones, is being dealt with, the pain does not return with the same severity. This analgesic effect has been attributed to the galvanic current, but experience after using several drugs and plain water at the anode does not bear out such explanation. Histamine alone seems to produce the effect on joint and rheumatic muscular pains. The general results have been sufficiently successful to standardise the treatment as a routine method in suitable cases, and patients are sent with prescription to be carried out by the trained attendants at the Royal Baths, Harrogate.

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13. Pickering, G. W., and Hess, W.: Brit. Med. Jour., 1932, ii., 1097.
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16. Wright, S.: Applied Physiology, 2nd ed., p. 291.

THE PHARMACOPŒIA OF A CHILDREN'S HOSPITAL

THE new pharmacopœia of the Great Ormond-street Hospital [1] is probably unique of its kind. Forty-four pages are devoted to prescriptions suitable for use in the treatment of disease in childhood, and 36 to such various considerations as serum therapy, the prevention of scarlet fever, measles, and diphtheria, the dosage of 606 and its modifications, the treatment of diabetic coma and hypoglycæmia, and the requirements for blood groupings, blood transfusion, pyelography, and a variety of other procedures. There is even a note on how to hold a baby for eye treatment, and another on " how to bring up children " ! The tables of infectious diseases and the vitamin content of different foods are particularly well presented. As in previous editions, the content of several leaflets designed for out-patient use has been included, and these do not all seem to have had the careful revision that is characteristic of the other sections. Thus in one, the nursing mother is told to feed her baby three-hourly until he is 4 months old, and then three and a half-hourly for one month, whereas in the table of artificial feeds change is made from six to five feeds in the 24 hours at the age of 5 weeks (which presumably means four-hourly feeding with omission of the 2 A.M. feed in the latter case, though this is not made clear). Similarly, the statement that skimmed milks are useless as foods has the merit of simplicity rather than of truth, and might be difficult to explain away if the necessity arose to use them. Apart from these comparatively minor points, an exceptionally high standard has been maintained; the editor, Mr. J. W. Peck, is to be congratulated on the inclusion of an amount of up-to-date material that is not elsewhere readily available, and makes this little book of real value both for hospital use and for the practitioner. The present edition contains 33 additions to, and 16 omissions from, the formulary; to one of these (the Linimentum Calaminæ of the new B.P.C.) reference has already been made by Mr. Peck in THE LANCET (1932, ii., 1026). The pharmacopœia is attractively produced, and its bulk has not been appreciably increased by the additions.

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[1] Pharmacopœia of the Hospital for Sick Children, Great Ormond-street, London, W.C. Published by authority of the Medical Committee. Edited by J. Wicliffe Peck, Ph.C., F.C.S., Pharmaceutist to the Hospital. Printed for private use. Copies may be had on application to the Secretary. Pp. 96. 3s. 6*d*. (Love and Malcomson, Ltd., London.)

AN ART DISCOVERY AT GUY'S HOSPITAL

THROUGH the discriminating interest of the Superintendent, Guy's Hospital has discovered that it possesses possibly a unique painting by an English eighteenth-century artist. The picture may be the only surviving specimen of the work of John Teal Cooper, an artist famous in his day as a painter of fruit and flowers. The painting, covered with a dark and discoloured varnish, hangs in the hospital. The canvas is approximately 3 ft. by 2 ft. 6 in., and the subject is fruit in variety—grapes hanging in large bunches from branches of vine, a cut melon, peaches, plums, pears, raspberries—with a crawling snail in the lower left-hand corner. The signature "Teal Cooper" is quite clear in the lower right-hand corner. One recognises the familiar make-up of the "fruit pieces" which were very popular 200 years ago. Until the picture is cleaned its merits as a work of art are hard to determine; but Teal Cooper was highly esteemed in his day, and the work, if unique, must be valuable.

Upon the death of Cooper, the *Daily Advertiser* of Oct. 29th, 1743, wrote: "A few days ago died (after a Lingering Illness) in the 45th Year of his Age, that celebrated Master in Painting, Mr. John Teal Cooper, well known to the ingenious World for his most excellent Performances in Fruit. He was a Man of good Learning and Parts, of polite Address of Conversation, and by the Connoisseurs esteem'd the Michael Angelo de Campidolo of the Age; His choicest Pieces are in England, but (by Reason of his long Illness) they are few, and those in the Hands of the Curious, who esteem them as rare and almost invaluable. There is one of his Master Pieces in the Great Room at Guy's Hospital, which remains as a Monument of that Great Man's Ability in Painting. His Death is universally lamented."

It was this notice, copied from the *Daily Advertiser* and sent to him a few days ago, which drew Dr. Eason's attention to the painting, the history of which was unknown. The questions of the painting and the artist were referred to Prof. W. G. Constable of the Courtauld Institute of Art, who replied that very little was known of Teal Cooper, the notice in the *Daily Advertiser* being the basis of practically every mention of him. "For example," writes Prof. Constable, "Horace Walpole records his name in the 'Anecdotes' and evidently had a hazy recollection of the *Advertiser* notice. The only additional information I can give you about him is that Teal Cooper was born at Burford, Oxfordshire, on April 11th, 1682, and that he worked mainly in King's Lynn, where he died in 1743. There is a mezzotint portrait of him in the British Museum, dated April 11th, 1733, which carries his arms. The reference in the *Daily Advertiser* to his being the 'Michael Angelo de Campidolo of the age' should almost certainly read 'Michaelangelo da Caravaggio.' I have not been able to discover any other examples of his work, and for the time being, at least, the painting at Guy's is unique." Prof. Constable points out that a photograph might lead to the identification of further work by Teal Cooper, and Dr. Eason is arranging to have the picture cleaned and photographed, when the hospital authorities will be able to provide reproductions. The picture is at present so thickly coated with old varnish that it is not possible to make a good photograph of it.

The picture is an interesting addition to the art treasures of the hospital, which already include a portrait of Guy, the founder, painted by Vanderbank in 1706; of a Mr. Crank, traditionally from the brush of Zoffany; and of Dr. William Saunders, by Lemuel Abbott.

ENTRY TO THE NURSING PROFESSION

THE National Council of Women of Great Britain, at a meeting and conference held at Torquay from Oct. 10th to 12th, passed the following resolution:—

Training of Nurses.—That this Council is of opinion that in order to increase the number of suitable candidates for the nursing profession it should be made possible for pupils to take part of the preliminary examination before leaving a secondary school, thus stimulating their interest and relieving the pressure of the first year in hospital.

This resolution follows the lines of Recommendations XL, XLI, and XLII of THE LANCET Commission on Nursing, though the Commissioners did not envisage the restriction of institutions in which candidates could be prepared for the first part of the examination to secondary schools. The examination referred to is the *Preliminary State Examination conducted by* the General Nursing Council. The opportunity may be taken to make it clear that adoption of the principle of division of this examination (which is already divided into two parts for purposes of re-entry) would in no way imperil the one-portal system of entry to the nursing profession, since both parts of the examination would still be conducted by the General Nursing Council.

THE STANDARD SURGICAL MANUFACTURING CO., LTD. (49, Eastcheap, London, E.C. 3), asks us to print the following statement: "The attention of the Company has been drawn to the fact that rumours are being circulated that the Company has an interest, financial or otherwise, in a retail house which sell surgical goods. The Company wishes to state that there is no truth whatsoever in these rumours, and that the policy of the Company is, and always has been, to supply to the trade only and not to make any direct sales to consumers."

Appointments

BRYCE, GRAHAM A., F.R.C.S. Eng., has been appointed Hon. Consulting Thoracic Surgeon, Manchester Consumption Hospital.

Births, Marriages, and Deaths

BIRTHS

ECCLES.—On Oct. 16th, at St. John's Wood Park, N.W., the wife of Dr. C. Yarrow Eccles, of a daughter.

RUSSIAN.—On Oct. 16th, at Alrewas, Burton-on-Trent, to Mollie, wife of A. de la C. Russian, M.R.C.S., L.R.C.P.—a son.

MARRIAGES

CUNNINGHAM—MCBRIDE.—On Oct. 21st, at St. Botolph's Church, Worthing, Alan Maitland Cunningham, M.B., B.Ch., to Norah Rowan, younger daughter of Dr. and Mrs. J. Best McBride, of Ashridge, Worthing.

DEATHS

BURY.—On Oct. 1st, at Dar-es-Salaam, Raymond Bury, Deputy Director of Medical Services, Tanganyika Territory, aged 51 years.

HOUGH.—On Oct. 15th, in a Manchester nursing-home, Charles Henry Hough, F.R.C.S., of Ambleside, in his 79th year,

KYLE.—On Oct. 17th, at Hornsey-lane, Highgate, Robert Kyle, M.B., Ch.B., in his 47th year.

MACLEOD.—On Oct. 19th, Herbert Adolphus Macleod, M.B., C.M., of India and "Bhamo," Worthing.

MUIR.—On Oct. 18th, suddenly, of heart failure, Mr. David Miller Muir, M.A. Camb., D.M.R.E., M.R.C.S., medical officer in charge of X ray, radium and electrical department, Royal Devon and Exeter Hospital, and a trustee of the Devon and Exeter Cancer Fund.

MURRELL.—On Oct. 18th, 1933, at 21, North Gate, Regent's Park, Christine Mary Murrell, M.D., B.S. Lond., on her 59th birthday.

WATT.—On Oct. 22nd, at The Hermitage, Harrogate, Thomas Watt, M.A., M.D., formerly of Darlington, in his 94th year.

WHITAKER.—On Oct. 14th, at Trinity-road, S.W., George Herbert Whitaker, M.R.C.S., L.S.A., in his 72nd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

THE CONDITIONS OF FŒTAL RESPIRATION *

By J. Barcroft, C.B.E., D.Sc., F.R.S.
PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF CAMBRIDGE

By way of preface some explanation of my interest in the conditions which govern fœtal respiration may be desirable.

In the course of studies by P. Rothschild (1932), W. Herkel, R. A. Hill (1933), and myself the following fact emerged—to wit, that as pregnancy proceeded in the rabbit the blood leaving the uterus and returning to the mother become increasingly dark. This indeed followed from two other observations made at the same time: (1) by the twentieth day of pregnancy the placenta and the volume of blood in the fœtal vessels had attained to about half their ultimate measure; (2) at the same date the embryos were scarcely of more than negligible size (Fig. 1). From this time onward the demand for oxygen made by the fœtuses grew quite disproportionately to the supply, with the result that the hæmoglobin of the maternal venous blood became increasingly denuded of that gas and the blood in the uterine veins became darker as the days passed.

The fœtus then grows in an environment the oxygen concentration of which is falling all the time—an uphill business you may say. True indeed, for is it not the problem of Everest, the maintenance of the organism in an atmosphere becoming progressively rarer? In one case the oxygen is in the air, in the other it is dissolved in the plasma of the blood which feeds the embryo, but substantially the problem is the same. Is the solution of the problem similar as well? Acclimatisation on the mountain consists of factors which depend upon the modifications in the actual process of pulmonary respiration and in those which affect the composition of the blood. The former can have no place in the life of the embryo. It is not without interest whilst studying embryonic respiration to keep one eye upon the mountain climber, in the economy of whose blood two principal changes have been noted—an increase in the hæmoglobin present, and a shift in the oxygen dissociation curve in the sense of greater affinity of the blood for oxygen (see Anselmino and Hoffmann, 1931).

A study of the chemical aspect of the problem might have been regarded as redundant in view of the anatomical findings of Mossman in rabbits. This author described the fœtal and maternal vessels as being, over part of their course, parallel and so disposed that the blood entering from the fœtus was in juxtaposition with that leaving the placenta in the maternal vessels, whilst the blood leaving for the fœtal circulation was in juxtaposition with the entering maternal arterial blood; thus along the whole length of its course the fœtal blood could pick up oxygen from that of the mother and leave the placenta of almost normal arterial quality. Nevertheless, so far as is known, this efficient anatomical arrangement is not of very general occurrence, and it seemed therefore interesting to carry out some experiments along chemical lines.

AN INVESTIGATION AND ITS RESULTS

Previous workers in this field had been Huggett (1927), and also Haselhorst and Stromberger (1930, 1931), both of whom had worked by modern methods. The latter workers had performed an elegant research on human subjects who had been objects of Cæsarean section; Huggett worked on goats.

Both the above authors made observations on the oxygen dissociation curve and their results differed, for while Huggett described the curve of the fœtal blood as being to the right of the maternal, Haselhorst and Stromberger placed the curves in the reverse positions.

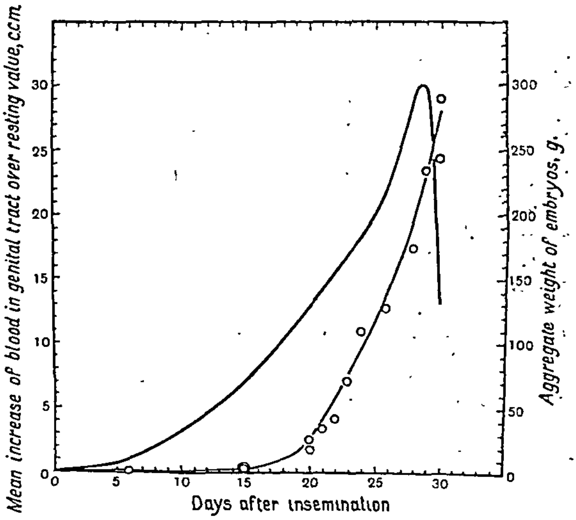

FIG. 1.—Showing increase in the volume of blood in the genital tract of the rabbit during pregnancy (left hand curve) and the aggregate weight of the embryos (right hand curve).

There is no research which purports systematically to have followed the possible alterations throughout the whole course of pregnancy. Huggett's goats were operated on as near to full term as possible, whilst the experiments of the German workers took place, in the nature of the case, at the birth of the infants.

A detailed description of the technical methods which we employed would here be out of place. Suffice it to say that we were able to obtain a series of goats, all "stocked" about the same time. The period of gestation in the goat is 21 weeks; we commenced our observations at the end of the seventh week, when the fœtus weighs about 10 g., and operated on one goat weekly, the weight of the kid at birth being somewhat over 2000 g. Of the series two proved not to be pregnant. A third, unfortunately the last, was found to have congestion of the lungs; while therefore it might have formed the starting point of a very interesting research on the effect of acute pulmonary trouble in the mother on fœtal circulation and respiration, it could yield no results of value as a final experiment on our series of normals. Between the seventh and the eighteenth week however we have a tolerable series.

The dissociation curve of the mother may be considered first. The curves of control goats which had not been stocked within 21 weeks of the date of investigation are not quite identical but fall within a very restricted area. This is true whether the blood be "whipped" or whether it be diluted with a measured quantity of oxalate-fluoride mixture—the oxalate to prevent clotting, the fluoride to prevent glycolysis. Anæsthetised non-pregnant goats yield curves also within this area, though if urethane is used the curves tend to be at the right hand edge.

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* The substance of an address given at the meeting of the American Association of Science in Chicago, on June 20th, 1933. The paper is a résumé of work carried out by G. S. Adair, J. Barcroft, S. Dickinson, R. H. E. Elliott, R. E. Havard, W. Herkel, F. G. Hall, A. StG. Huggett, A. B. Keys, E. F. McCarthy, F. J. W. Roughton, and M. Talaat, which will shortly be published in extenso.

The dissociation curves of the goats of our stocked series which were not pregnant fell also within this area. They were operated on in every way like the pregnant animals, their condition being revealed on opening the uterus. Of the pregnant goats, that investigated in the seventh week also yielded a dissociation curve within the normal area, but from the tenth week onwards the curve commenced to drift to the right of the normal area, that is in the sense that the oxygen became more and more easily detachable from the hæmoglobin (Fig. 2). By the eighteenth week the 50 per cent. saturation point of the maternal curve had moved some 9 mm. to the right of the mean normal position.

Note here *that the degree of inflection of the curve* is unaltered; any one of the maternal curves might be derived from any other by a mere alteration of the scale on which the horizontal component is drawn.

The dissociation curve of the fœtal blood.—Ninth and tenth week embryos were the youngest on which we experimented. On the blood of each we made a single determination. Here again the curve seemed to fall within the normal area. The determinations made on the weeks just subsequent at first gave the impression that just as the maternal curve drifted to the right, the fœtal curve drifted to the left—a symmetrical process taking place (Fig. 3). That impression was not altogether borne out by the facts—as appeared when we were able to obtain a larger number of points on any particular curve. At all events it is only a partial representation of them. It is true that in the fifteenth week the 50 per cent. saturation point of the fœtal blood is to the left of that in the tenth or eleventh week; but a new point appeared. The fœtal dissociation curve was at this stage of a different essential shape from that of the mother. It was less inflected; at about 90 mm. the two cross, and from this point downwards they diverge. The proportionate distance between them expressed as a function of the distance of one or other from the ordinate, increases progressively as the saturation diminishes. Actually between 80 per cent. and 40 per cent. saturation the fœtal and maternal curves are roughly parallel, separated in the fourteenth week by about 13 mm.

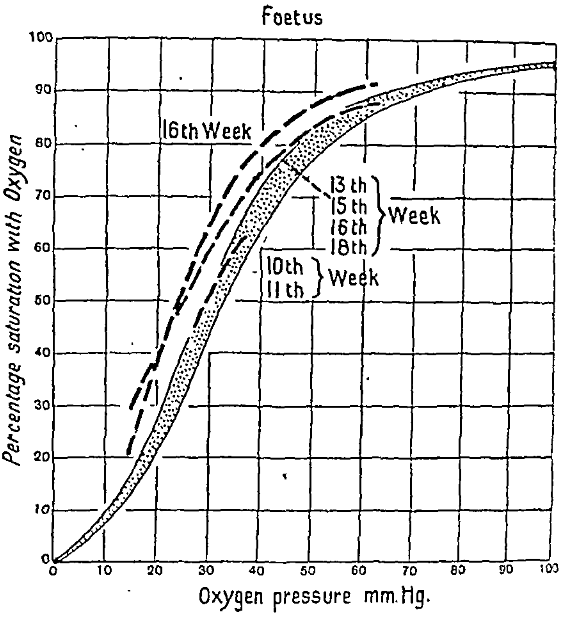

FIG. 3.—Position of oxygen dissociation curve of blood of embryos during the course of pregnancy. 50 mm. CO_2 pressure.

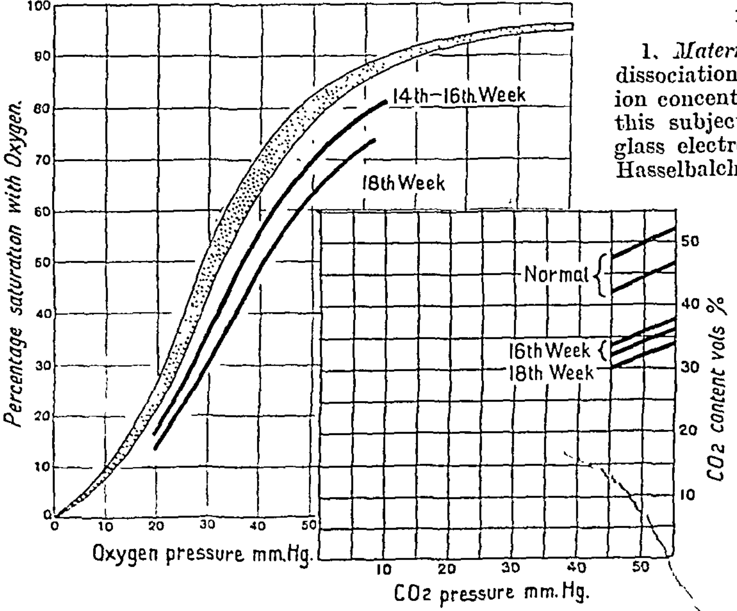

FIG. 2.—Upper figure: Oxygen dissociation curves of blood of mother. Shaded area includes normals, anæsthetised normals, and pregnant goats up to the seven weeks of pregnancy. 50 mm. CO_2 pressure. Lower figure: CO_2 dissociation curves showing fall in alkali reserve.

At a later stage the gap is greater, the dissociation curve of the mother having shifted further to the right, whilst that of the fœtal blood remains in much the same place as in the fourteenth week, but towards the end of pregnancy the degree of inflection seems to vary within wider limits approximating in some cases to that of the maternal blood (Fig. 4).

ATTEMPT TO EXPLAIN THE MOVEMENT OF THE MATERNAL AND FŒTAL CURVES

1. *Maternal.*—The alteration in the position of the dissociation curve appears to be a matter of hydrogen-ion concentration. Experiments have been made on this subject by Havard and Dickinson, using the glass electrode, and also by Hall and Keys by the Hasselbalch-Henderson method. In the former case the pH of the blood as taken from the vessels was measured; the answer therefore depended largely on the momentary concentration of CO_2. The plotting of the CO_2 dissociation curves allows of a comparison under standard conditions. This comparison indicates that the blood of the mother loses in base as the pregnancy proceeds, for there is a progressive drop in the alkali reserve of the plasma (Fig. 2).

2. *Fœtal.*—Alterations in the hydrogen-ion concentration cannot be said to account for the peculiar features of the blood in the fœtal circulation. There is no evidence that the alkali reserve of the fœtal blood is higher than that from the normal goats, or that it rises as pregnancy proceeds. Indeed, the evidence so far as it goes is: (1) that the alkali reserve of the

fœtal plasma is on the whole intermediate between that of normal goats' plasma and that of a goat in the later stages of pregnancy; (2) that it is maintained at a fairly constant level; (3) from which incidentally we gather that at the end of pregnancy there is considerably more base in the fœtal than in the maternal blood; that, however, though important, is a digression. If the shift in the dissociation curve is not to be explained on the ground of increased alkalinity we must seek a solution in some other direction.

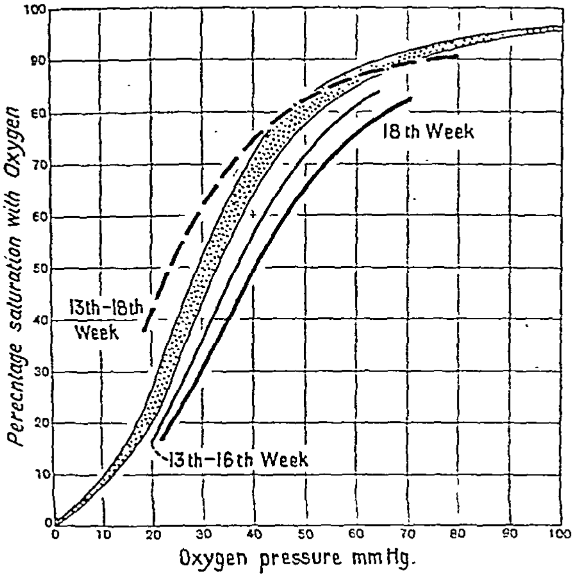

FIG. 4.—Comparison of fœtal and maternal curves. 50 mm. CO_2 pressure.

DIFFERENCES IN MATERNAL AND FŒTAL HÆMOGLOBIN

It is natural to ask whether the fundamental characters of the fœtal and maternal hæmoglobins are identical. In this connexion let us go back to the demonstrated abnormality in the inflections of the dissociation curve of the fœtal blood.

The natural extension of this observation is to prepare, from the fœtal and maternal bloods respectively, the corresponding hæmoglobins in a condition approximating to chemical purity. This has been done by Adair and McCarthy at a pH of 6·8. The result is somewhat remarkable. The oxygen dissociation curves of the hæmoglobins of this maternal and embryonic blood, when prepared and analysed under standard conditions, showed differences of just the same type as the bloods of the animals from which the samples of hæmoglobin were prepared. The same was true when the hæmoglobin was dissolved in quite dilute solutions and the estimations made by spectroscopic methods (Hall) instead of the van Slyke technique.

It may not be amiss to review certain indirect evidence which indicates that it is not unreasonable for the two to differ.

1. Reichert and Brown (1909) pointed out that there were in blood two forms of hæmoglobin.

2. Geiger, by a process of electrodialysis, separated from blood two hæmoglobins which had dissociation curves of different degrees of inflection; these, however, may have been artefacts.

3. The fœtal hæmoglobin is only in part made in the bone-marrow, and it is possible that the pigment made elsewhere—e.g., in the vascular cords of the mesoderm—may not be identical with that made in the marrow.

4. The vascular conditions in the fœtal circulation seem to be quite special. I have already called attention to the fact that the placenta has attained to a very high degree of development while the fœtus is still quite diminutive. In the tenth week of fœtal life the embryo is 100 g. in weight, but the blood volume of the fœtal circulation is 40 c.cm. Now it is clear that most of this blood must be not in fœtus but in the placenta, and that therefore the fœtal elements in the placenta (including the blood) develop pari passu with the placenta as a whole and in advance of the embryo itself.

Having digressed so far, may I be permitted to digress a little further. The development of the umbilical vessels appears to be related in time to that of the embryo rather than to that of the placenta. If the diameter of the umbilical veins is an indication of the amount of blood which transverses them in unit time, that volume corresponds to the fœtal development (Fig. 5). Hence the picture at the end of the tenth week is that of a large placenta, 40 c.cm. of blood shared between the placenta and the fœtus, but principally in the placenta, and circulating very slowly.

Although this blood is poor in hæmoglobin, yet it is so large in amount that the actual quantity of pigment is out of all proportion to the fœtus. The oxygen capacity of the blood in the fœtal circulation at this stage is 3 per cent. of the total fœtal volume, whilst at the end of the eighteenth week it is only 1 per cent. thereof.

5. It is well known that towards the end of fœtal life much of the hæmoglobin is broken down and the iron is stored in the liver to be rebuilt once more into blood pigment postnatally. In *icterus neonatorum* the blood is red not only of an *excess* of hæmoglobin engendered by oxygen-want in the fœtus (Anselmino and Hoffmann), but it is in part red also of the fœtal *type* of hæmoglobin—a type which acquires oxygen with ease, though it sheds it with difficulty. In one phase it is appropriate to the condition of oxygen-want imposed on the fœtus; in the other phase it suffices for the vegetative existence of the embryo.

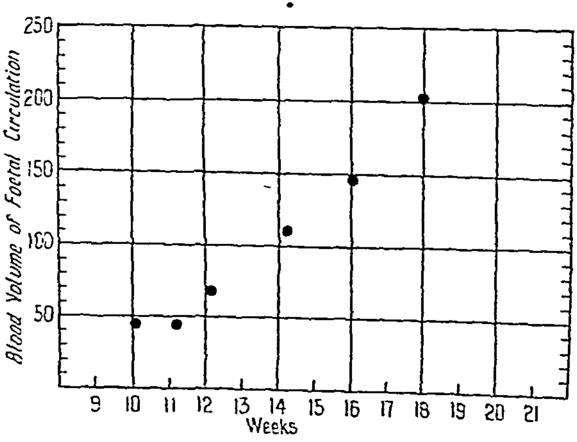

FIG. 5.—Volume of blood and the fœtal circulation, including the umbilical cord and fœtal vessels of the placenta.

DEDUCTIONS FROM THE EXPERIMENTS

Having as I think set out some of the conditions of fœtal respiration, the question cannot be postponed indefinitely. "What actually takes place within the limits of framework which has been revealed?" The answer is at present obscure, for while the data of numerous experiments is at hand the interpretation is difficult, and it is far from certain that the experiments are technically of sufficient merit to justify any interpretation whatever. But we may approach the problem and survey it even if we cannot solve it. Let me state to start with that the tension of oxygen in the blood which reaches the fœtus is not appreciably higher than in that which leaves the placenta for the mother. It is true that we have sometimes found an apparent excess of 2 or 3 mm.; against this however must be put the facts (1) that the two bloods were not drawn simultaneously, and (2) that the maternal blood analysed was only a sample emerging from two or three cotyledons. Our experiments furnished no convincing evidence of oxygen secretion on the great scale in the placenta.

In the thirteenth to sixteenth week it would be possible for the blood in the umbilical vein to have a saturation some 20 per cent. higher than that of the blood in the placental vein without the tension of the former exceeding that in the latter, or alternatively it would be possible at the same percentage saturation to have a pressure gradient of about 13 mm., and in the eighteenth week somewhat more. The trouble is that we have found, apparently, both pictures in the frame, and what is more disturbing we have found them both in the same animal. When with the maternal blood saturated about 50 per cent. to 60 per cent. you find the blood going to one of the twin embryo over 80 per cent. saturated, and three hours later, with little change in the maternal blood, that going to the other embryo 40 per cent. saturated, further inquiry rather than hasty deduction is demanded of the situation.

Let me therefore summarise.

It seems to be proved: (1) with regard to the *mother*, (*a*) that from about the middle of pregnancy onward, the dissociation curve shifts to the right, and (*b*) that the shift may be accounted for by an increase in the hydrogen-ion concentration of the maternal blood; (2) with regard to the *fœtus*, (*a*) that, on the whole, from about the same time, the dissociation curve of the fœtal blood at the relevant pressures of oxygen falls to the left of the normal position, and (*b*) that the shift is not due to abnormal alkalinity of the fœtal blood, for this is no more alkaline than that of the normal goat; (3), that the characteristic dissociation curve of fœtal blood is due to a specific form of hæmoglobin.

Again, it seems proved that during the latter part of pregnancy the blood of the fœtus is richer in base than that of the mother.

It is proved that the quantity of carbonic anhydrase in the fœtal blood is small as compared with that in the maternal blood, especially in the early stages, but the precise significance of this fact cannot be stated with certainty (Roughton).

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CARBOHYDRATE IN RELATION TO THE TREATMENT OF THYROTOXICOSIS

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The treatment of thyrotoxicosis resolves itself into one or other of three alternatives. It is a matter of fairly general agreement that, except in a limited number of *mild or incomplete cases, medical* measures require to be supplemented either by radiation of the thyroid or its operative removal. In every case medical measures are of paramount importance, whether representing the whole of the therapeutic procedures or as a preliminary to more vigorous methods. Particularly is this so in relation to pre-operative preparation and post-operative treatment. The value of iodine in this direction is undoubted, but the question of diet also appears to be of some importance.

It is a striking characteristic of thyrotoxicosis that in the majority of cases a good, and even abnormally good, appetite is retained in spite of the loss of weight; indeed, apart from diabetes mellitus, this combination of facts is almost diagnostic of thyrotoxicosis. That the diet, therefore, requires to be of a high calorific value is obvious, but its optimum constitution is a matter of discussion.

Joll[1] does not appear to consider that any specific adjustment is indicated, though he adds that "carbohydrates may usually be given freely." Many observers have advised restriction of protein because of the belief that protein accelerates metabolism.

Kommerell[2] observed 24 patients on a diet in which there was practically no protein, but which was almost entirely carbohydrate, and found considerable benefit. This benefit he attributes to the restriction of protein; it is, however, to be noted that the diet used was almost entirely carbohydrate. Moll[3] called attention to the value of a carbohydrate *predominance* in the diet. His main reason for this adjustment appears to have been that of digestive efficiency. He had observed— the observation
has been confirmed—the ociation of
achlorhydria or hypochlorhy toxicosis,
and regarded such secreto as an
important factor in the caus tic
symptoms so frequently f dition.
It is a point of discussion, r the
dyspeptic symptoms are to or
whether they are more ated
to neuromuscular disturbances ted
in a condition of such profoun
Nevertheless, Moll was of opinion
rich diet is beneficial in treatme

THE RELATIONSHIP BETWEEN
CARBOHYDRATE META

The favourable influence of ca
to be in three directions.

First.—Improvement has been
more complete when patients h
with a rich carbohydrate diet and
they have been treated with io
may be purely attributable to the
carbohydrates are easily metabolise
It is suggested that the value is m

There is much evidence of a re
the thyroid and carbohydrate meta
Falta, and Rudinger[4] maintained t
of the thyroid, glycosuria was n

injection of adrenaline into dogs, and that adrenaline hyperglycæmia was less in thyroidectomised dogs. Cramer and Krause[5] showed that the addition of thyroid gland to the diet of cats and rats produced a total disappearance of glycogen from the liver, an observation which was confirmed by Kuriyama.[6] A further general relationship was suggested by the work of Denis, Aub, and Minot,[7] who showed that, although a fasting hyperglycæmia is rarely associated with hyperthyroidism, alimentary hyperglycæmia was observed in every instance. Bodansky[8] demonstrated a rise in blood-sugar by administering thyroxine to sheep. Burns and Marks[9] from their experiments showed that:—

(*a*) Thyroidectomy diminishes the hyperglycæmic reaction to adrenaline.

(*b*) Thyroid feeding, so long as the glycogen store of the liver is not diminished, increases the hyperglycæmic reaction to adrenaline and diminishes the hypoglycæmic reaction to insulin.

(*c*) When, as a result of prolonged thyroid feeding, the liver glycogen disappears, the hyperglycæmic reaction to adrenaline diminishes and the hypoglycæmic reaction to insulin increases.

In a further paper Marks[10] restates these views and sums up by saying that "one of the effects of increasing the amount of thyroid hormone in the body is to render the liver more sensitive to such stimuli as promote glycogenolysis and discharge of sugar into the blood stream, and, conversely, that elimination of the hormone by thyroidectomy diminishes the readiness with which the liver converts its glycogen into sugar."

Abderhalden and Wertheimer[11] indicated similar results—namely, that thyroxine or thyroid substance given to dogs, rabbits, guinea-pigs, rats, and mice caused a reduction of the glycogen content of the animal, especially marked in the liver and leading to complete utilisation of the carbohydrate stored in that organ.

A further important relationship is that of hyperthyroidism and diabetes. Joslin,[12] in an analysis of 3869 patients operated upon for thyroid disease, of whom 2406 had thyrotoxicosis, found the incidence of diabetes to be 3·15 per cent. John[13] has reviewed the whole subject. He quotes figures from the literature showing the incidence of hyperthyroidism in diabetes to be an average of 1·68 per cent., and the incidence of diabetes in hyperthyroidism to be an average of 2·31 per cent. The incidence of hyperglycæmia in hyperthyroidism is, of course, higher. In John's 9000 personally observed cases of thyroid disease, mainly with hyperthyroidism, the incidence of hyperglycæmia was 6·8 per cent. Further observation proved many of these to be non-diabetic, the ultimate percentage of true diabetes being 2·1.

It is probable that where diabetes follows or complicates hyperthyroidism, there existed in the individual the predisposition or "Anlage" to diabetes, precipitated into the developed diabetic state by the metabolic disturbance induced by the hyperthyroidism. It is interesting to note that there is no constant relationship between the severity of the thyrotoxic symptoms and the development of diabetes.

These facts are of great importance because, clearly, if a diabetic state exists, the use of very rich carbohydrate diets would be disadvantageous. Where glycosuria or hyperglycæmia is found, the case should be fully reviewed with the necessary blood-sugar observations, and any carbohydrate bias in the diet should be supported by adequate dosage of insulin.

The general deduction from the experimental work outlined above is that in thyrotoxicosis there is a constant tendency to depletion of liver glycogen. A rich carbohydrate diet would assist in maintaining the requisite glycogen reserves. The general value of sparing tissue proteins is no doubt also of importance.

Secondly.—Pre-operative preparation has been more satisfactory and post-operative crises less severe.

Thirdly.—Where crises, and even those of intense severity, have occurred, the administration of carbohydrate in the form of glucose has produced resolution of the grave symptoms.

Frazier[14] supports this view on the basis of clinical and experimental evidence and recommends glucose administration, particularly as an immediate pre- and post-operative procedure. He is, however, opposed to the administration of glucose in too high a concentration, because the object is to replenish the glycogen stores of the liver, which cannot be effected unless adequate fluid is available. Maranon[15] considers that emptying of the glycogen reservoirs is the cause of the diarrhœa, vomiting, and even the jaundice and coma which may occur in thyrotoxicosis and its post-operative crises; clearly a further support for the value of carbohydrate in large quantities.

It has been shown by several observers that anæsthesia, especially if prolonged, leads to hyperglycæmia by mobilising glycogen reserves. As already indicated, thyrotoxicosis, even apart from anæsthesia, tends to deplete these reserves. Such depletion is likely to be even more extreme as a result of the acute post-operative thyrotoxic disturbance. Adequate glucose administration immediately before and after operation would therefore appear to be logical. Further, glucose would tend to minimise any general tendency to post-operative acidosis. Finally, if, as seems probable, acute hypoglycæmia plays a part, at any rate, in the post-operative disturbances of thyroidectomy, glucose administration should be of value in promoting the resolution of such symptoms.

ILLUSTRATIVE CASES

CASE 1.—Mrs. A, aged 28, a case of primary toxicosis of 18 months' duration. The weight had gone down from 9 st. 4 lb. to 6 st. 2 lb. There was auricular fibrillation with a ventricular rate of 164. The maximal cardiac impulse was in the sixth left interspace almost in the mid-axillary line, with enlargement of the area of cardiac dullness to the right of the sternum. This patient had been previously treated elsewhere by rest and iodine without any improvement. She was herself impressed by the great improvement experienced on the régime detailed below. Operation was performed after 15 days. A few hours after the operation a severe crisis began to develop. Intravenous glucose was administered, with rapid resolution of symptoms and a subsequently uneventful recovery. It is interesting to note that, apart from striking general improvement, the fibrillation has now disappeared.

CASE 2.—Mr. B, aged 28, a severe case previously treated elsewhere by iodine followed by X rays. In spite of preparation this patient developed the most severe post-operative crisis which we have ever experienced. He was semi-conscious and delirious, with profound vomiting and jaundice; the urine contained albumin, blood, and bile. Glucose was given rectally and intravenously, together with iodine by stomach-tube. The position appeared hopeless but he came round. He has made a complete recovery and is putting on weight rapidly. Though in this case the procedure suggested did not prevent a very grave crisis, it appears very doubtful whether a fatal issue could have been prevented without them. In any event, the value of glucose when the crisis was already established seems definite.

CASE 3.—Mrs. C, aged 28. This patient when first seen was regarded as a mild case, and after a preliminary period of three weeks in bed on iodine and diet was given X ray treatment. After the third treatment she developed an acute thyrotoxic reaction with marked vomiting. Her pulse-rate was 172. She was given glucose and saline intravenously, and glucose, saline, and Lugol's iodine per rectum. Recovery was very rapid from this emergency and she was prepared for operation. After the operation there was a severe crisis with vomiting, moderate pyrexia, and great increase in the heart-rate. Two intravenous injections of glucose were given with rapid resolution of symptoms. Subsequent progress was uneventful and satisfactory.

During the last three years 95 cases of thyrotoxicosis have been treated. Many of them were of a mild type treated by rest, iodine, and diet, with or without subsequent radiation of the gland. Of these, 53 cases were regarded as severe, and 38 were submitted to operation; in the remaining 15, operation was refused and most were treated by prolonged radiation. Of the 38 operation cases 3 died; 31 were primary and 7 secondary; 28 were females; the youngest was 15½ years old and 2 were over 50. The duration of symptoms varied from 3 months to 11 years. Ten were males, 3 of whom were over 50; duration of symptoms varied from 6 months to 3 years. Four cases—all women—had auricular fibrillation of some standing.

THE BASIC DIET

In all these cases a similar routine has been employed: a diet very rich in carbohydrate, including honey and glucose, together with Lugol's iodine in varying dosage until the optimum point was considered to have been reached. One hour before operation 1 to 2 oz. of glucose was given, together with 20 to 30 minims of Lugol's iodine, a somewhat similar dosage being repeated two to three hours after operation. Glucose administration was continued for 36 to 48 hours and the iodine in gradually diminishing dosage for seven days. The basic diet—practically identical with that of Moll—was the following. As mentioned, glucose and honey were added as far as the patients were able to tolerate them.

DIET OF HIGH CARBOHYDRATE VALUE

6 A.M.	Oatmeal porridge, with ½ oz. cream and two teaspoonfuls sugar.	
	Tea, with 1 oz. milk.	
	Butter	½ oz.
	Honey or jam	1 oz.
	Bread (white)	3 slices.
	Fruit: Bananas, grapes or prunes, pears, apples, and oranges.	
8 A.M.	Horlick's malted milk	6 oz.
	Bread	2 slices.
	Honey	½ oz.
10 A.M.	Milk, 8 oz., with one beaten egg and two teaspoonfuls sugar.	
12 noon.	*Lunch:*	
	Underdone beef, sweetbreads, chicken, rabbit	2 oz.
	Fish: cod, hake, haddock, whiting, plaice, and soles	2½ oz.
	Potatoes, peas, parsnips, turnips, carrots	6 oz.
	Bread	2 slices.
	Milk	6 oz.
	Milk pudding	4 oz.
4 P.M.	Dextri-maltose (Mead's).	
	Milk	8 oz.
	Tea: The same as breakfast, but no porridge.	
	Before bed: Glass of Horlick's malted milk, a couple of biscuits, and ½ oz. of butter.	

These quantities are regarded as an average, and patients are allowed more if they desire it.

CASE 4.—Mrs. D, aged 52 years, a very severe case, who had been seen some months previously when operation was advised but refused. This patient was admitted in a state of extreme emaciation, delirious, and fibrillating, with a ventricular rate of about 180 per minute. For several days she was given glucose and subcutaneous salines; iodine and coramine 1 c.cm. was injected every four hours. She was later put on the diet with considerable amounts of glucose. Before operation the ventricular rate was between 90 and 100. The highest temperature recorded after the operation was 99·04° F., and the highest ventricular rate was 130, which lasted for an hour or so and rapidly fell to 100 or just below. There was no anxiety about her condition. Some packing had been left in the wound, and when this was removed and replaced two days and six days after the operation there was a transient rise of pulse-rate and temperature.

CASE 5.—Miss E, aged 37, a case which had relapsed after previous medical treatment and radiation. There was no appreciable post-operative crisis. The highest temperature recorded during the 48 hours after operation was 99·04° F., and the highest pulse-rate 120. No anxious or disturbing symptoms occurred.

CASE 6.—Mrs. F, aged 30, a very severe case, fibrillating; weight 8 st. 1 lb. During the 48 hours after operation the temperature rose as high as 101° F., and the heart-rate varied between 110 and 130. There were no anxious symptoms and subsequent progress was perfectly uneventful.

CASE 7.—Mr. G, aged 45. Three years' history; had lost 3 st. in the last two years. Operated on after 19 days' preparation. For 48 hours after operation the temperature was 99° F., and for a short time the pulse-rate was 120, rapidly falling to below 100. At no time was there any real disturbance nor the slightest anxiety.

CASE 8.—Miss H, aged 41; 18 months' history. Diet and iodine for 16 days. For 48 hours after operation temperature between 99° F. and 100° F. Pulse-rate before operation 100; for 12 hours after operation rose to 120, falling within 48 hours to 90. No disturbing symptoms. Recovery uneventful.

My thanks are due to Mr. P. G. McEvedy and Mr. R. L. Newell, who have operated upon the majority of the patients.

Since this article was written ten more cases have been operated upon in a similar way with successful results.

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PERONEAL MUSCULAR ATROPHY IN FIVE GENERATIONS

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PERONEAL muscular atrophy of the Charcot-Marie Tooth type is a rare disease. The object of this paper is to record, first, a family tree, tracing the disease through five generations (Fig. 1); and secondly, a detailed study of two members of the family. The tree was compiled from reliable information obtained from the two patients whose cases are described.

THE TWO CASES

CASE 1 (E 5 in the family tree).—A sawyer, aged 46, was admitted on May 23rd, 1933, to Dr. W. F. Croll's ward at the Royal Infirmary, Aberdeen. Apart from pleurisy and pneumonia at the age of 12, and a few attacks of influenza, he had led a healthy and active life. When 20 years old he noticed he had difficulty in putting on his boots, and that his feet "flapped about" when he walked. Since then he has complained of increasing wasting and weakness of the legs, with occasional shooting pains in the arms and legs. A short time after he had difficulty in walking he observed that his grip in both hands was weaker. He has two children, a boy of 18 and a girl of 14, neither of whom seems to be affected.

The patient is healthy looking and well nourished. The mental functions are normal and there is no impairment of speech. The optic discs and fundi are normal. The visual acuity is good and the fields of vision full to hand movements. The pupils are central, of medium size, circular, equal, and react to light and on accommodation. The eye movements are full and there is no nystagmus. The remaining cranial nerves are normal. The muscles of the face are not wasted.

There is a very fine tremor of the outstretched hands, and well-marked fibrillary tremors are to be seen in the muscles of the forearms, arms, legs, and thighs. The hands (Fig. 2) show wasting of the interossei, the muscles of the thenar eminences, and, to a less extent, of the hypothenar eminences. There is diminished power in adduction and abduction of the thumb, and the patient experiences great difficulty in picking up small objects, such as pins, matches, &c. The muscles of the forearms are not obviously wasted. Muscular atrophy is conspicuous however in all the muscles of the legs and feet, especially in the peronei. The thigh muscles have escaped. Bilateral talipes equinovarus and pes cavus are present (Fig. 3). The feet are held in the claw position, with the toes hyperextended at the metatarso-phalangeal joints and flexed at the interphalangeal joints. The patient has great difficulty in performing the heel and toe test, probably because of the muscular atrophy. Romberg's sign is positive. He walks on the outer borders of the feet where there are large callosities, and his gait reveals some degree of foot-drop. He is unable to dorsiflex the feet, but the power of plantar flexion is fairly good.

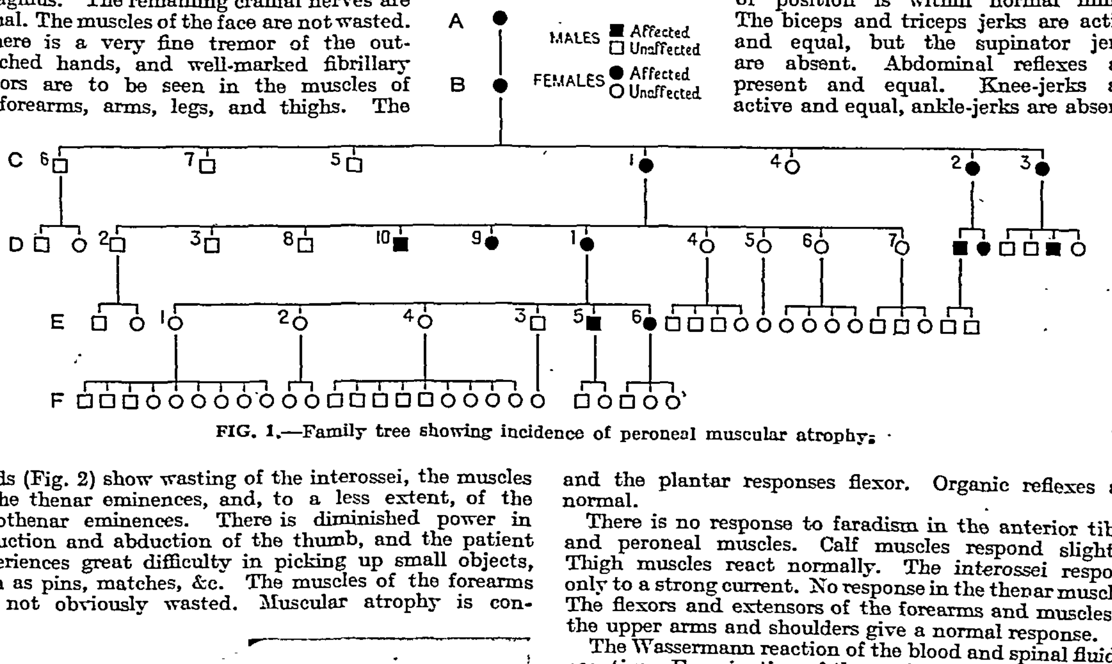
A
B
MALES ■ Affected □ Unaffected
FEMALES ● Affected ○ Unaffected
C 6 7 5 1 4 2 3
D 2 3 8 10 9 1 4 5 6 7
E 1 2 4 3 5 6
F

FIG. 1.—Family tree showing incidence of peroneal muscular atrophy.

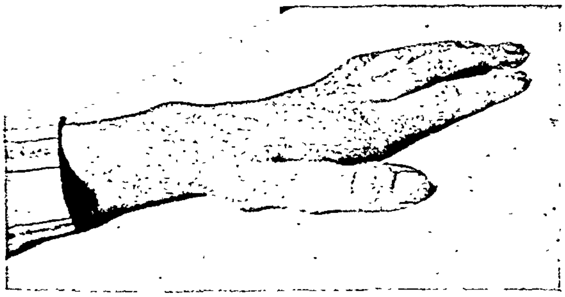

FIG. 2 (Case 1).—Photograph showing wasting of the muscles of the thumb.

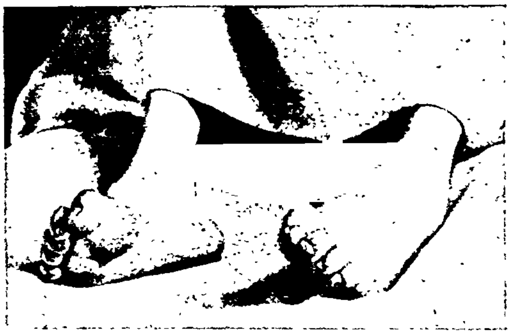

FIG. 3 (Case 1).—The deformity of the feet.

Sensation to cotton-wool and pin-prick is normal. Temperature sense shows no impairment. Joint, deep pressure, and vibration senses are normal, and the sense of position is within normal limits. The biceps and triceps jerks are active and equal, but the supinator jerks are absent. Abdominal reflexes are present and equal. Knee-jerks are active and equal, ankle-jerks are absent, and the plantar responses flexor. Organic reflexes are normal.

There is no response to faradism in the anterior tibial and peroneal muscles. Calf muscles respond slightly. Thigh muscles react normally. The interossei respond only to a strong current. No response in the thenar muscles. The flexors and extensors of the forearms and muscles of the upper arms and shoulders give a normal response.

The Wassermann reaction of the blood and spinal fluid is negative. Examination of the cardiovascular, alimentary, respiratory, and renal systems revealed nothing abnormal.

CASE 2 (son of C 4 and cousin of the mother of the first patient).—Admitted on August 28th, 1933. A farmer, aged 53, he presents a picture of a more advanced stage of the disease. He has two sons aged 6 and 2 years, who are both perfectly normal children. He was troubled with sore-throats in his youth, suffered from measles at the age of 47, and had whooping-cough two years ago. For the last 20 years he has complained of mild attacks of bronchitis and asthma. About the age of 18 he noticed he had difficulty in walking, which, he states, was due to "ankle-drop" and which has become progressively worse. About the same time he observed that his legs, which had never been well developed, were getting thinner. He has had progressive wasting of the muscles of the hands for over ten years. He has never noticed fibrillary tremors and has never complained of pains in the limbs.

The patient is a thin but healthy looking man of the wiry type. The mental functions are good. Optic discs and fundi are normal. Nystagmoid jerks are present on looking to the right and left. The cranial nerves are normal.

Fibrillary tremors are evident in the muscles of the forearms and thighs. There is marked wasting of the interossei and muscles of the thenar and hypothenar eminences (Fig. 4), with corresponding weakness in adduction and abduction of the thumbs. The forearm muscles are normal. There is a slight degree of pes cavus and claw-foot. The patient walks on the soles of the feet with the characteristic drop-foot gait. Drop-foot is so marked that he can only walk about with comfort by maintaining the feet in dorsiflexion by means of bandages. The muscles of the legs and lower third of the thighs show extreme wasting, especially in the distal portions (Fig. 5). Dorsiflexion of the feet is impossible, but there is a fair amount of power remaining in the calf muscles.

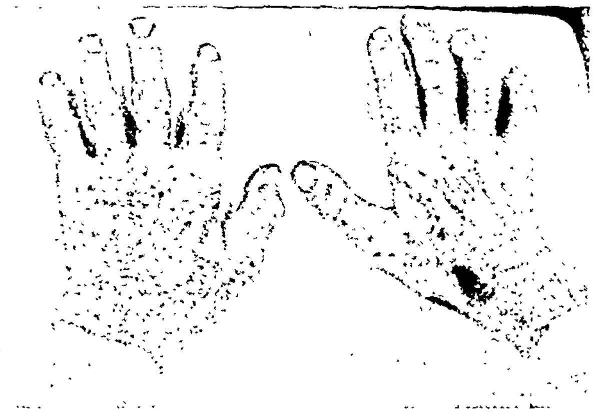

FIG. 4 (Case 2).—To show wasting of the interossei.

Sensation to cotton-wool, pin-prick, and thermal stimuli is normal. Sense of position, joint, deep pressure, and vibration senses are normal. Biceps and supinator jerks are absent, and triceps jerks are present but feeble. Abdominal reflexes are normal. Knee- and ankle-jerks are absent. Plantar responses are flexor. Organic reflexes are unimpaired.

The peronei react to faradism better than any of the other leg muscles, but still very feebly. In the left leg tibialis anticus and extensors of the toes give a still feebler reaction. In the right leg there is no response. The calf muscles and intrinsic muscles of the feet react feebly. Thigh muscles react normally. Forearm muscles give a normal response. In the hands all the intrinsic muscles react well, except the opponens and adductors of both thumbs which require almost full current to produce a very feeble response.

The Wassermann reaction of the blood is negative and the cerebro-spinal fluid is normal. Examination of the lungs reveals some pulmonary fibrosis and emphysema. Examination of all other systems is negative.

In neither of these cases was there any obvious thinning of the shafts of the bones. Radiography of the tarsus, tibia, fibula, and femur, in both cases controlled by a similar examination of a healthy patient of the same age and build, showed nothing abnormal. Currie[1] in 1927 described the disease in a boy aged 9 years. He demonstrated radiologically that the bones were distinctly more transparent than normal, and he drew attention to the marked atrophy in the shafts of the femora and in the bones of the forearms and legs.

As the disease in the two cases described did not manifest itself until the ages of 20 and 18 years respectively, when the shafts of the long bones are nearly fully developed, it is not surprising to find the bones of normal size and density. It seems probable that when the disease begins in childhood, consequent on the atrophy of the anterior horn cells, there is retardation of growth in the corresponding long bones.

THE CLASSICAL TYPE

The disease was described in 1886 by Charcot and Marie,[2] and in the same year in this country by Tooth.[3] Tooth, in his thesis based upon five personally observed cases, states that although the peroneal muscles are usually first affected the wasting may commence in any of the other muscles of the leg. The deformity of the foot depends on the order of involvement of the various muscles. If the intrinsic muscles of the foot are first attacked pes cavus will occur. Symonds and Shaw[4] have described ten cases in the same family of "formes frustes" of the Charcot-Marie-Tooth disease. The atrophy commenced in the intrinsic muscles of the feet and became arrested at that stage. Bilateral pes cavus occurred in all cases. Similar cases have been described by Roussy and Lévy.[5] Wasting of the tibialis anticus and extensors of the toes will produce drop-foot. This is the lesion shown by the second case, whose peronei were least affected of all the leg muscles. When the peronei are earliest affected equinovarus will result, and this is the deformity described by Charcot, Marie, and Tooth. The first case, which shows marked equinovarus, appears to belong to the more classical type of the disease.

GENETIC ASPECTS

Of the other members of the family who have shown signs of the disease all are dead except three. Two of these are abroad. The other (E 6), aged 42, a sister of the first patient, shows only slight wasting of the peronei and slight difficulty in walking on account of foot-drop, which she has noticed for a few years.

A. and B.—Both died in old age. Muscles of legs and hands markedly wasted.

C 1.—Condition similar to Case 1 (E 5). Died aged over 70.

C 2.—Had wasted legs and foot-drop. Muscles of hands were also wasted. Died aged 82.

Daughter of C 2. — Slight difficulty in walking on account of a claw-foot and foot-drop. A thin woman, aged 48.

C 3. — Condition of feet unknown. Hands showed wasting with definite loss of power.

Son of C 3.— A school teacher, condition similar to Case 1. Disease commenced in youth and progressed to an advanced stage. Had pes cavus and equinovarus. Died aged 50–60.

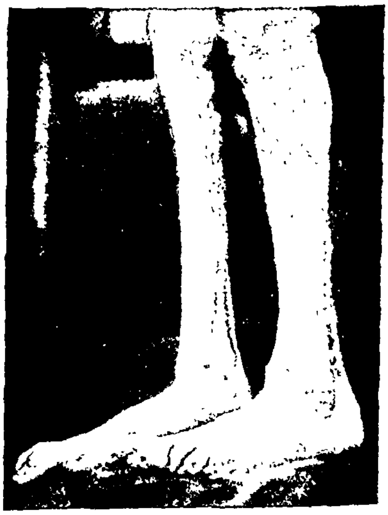

FIG. 5 (Case 2).—Extreme wasting of the muscles of the leg.

D 1.—Similar to Case 1. Disease began at age of about 50. Died aged 72.

D 9.—Weakness and wasting of legs commenced in youth and progressed to an advanced age. Died aged 72.

D 10.—Similar to Case 1. Disease commenced in his youth. Aged about 70.

Heredity is an important though not a constant feature of the disease. Herringham [6] in 1888 reported a family in which only males were affected, the disease being transmitted by healthy females. Raffan [7] in 1907 described a typical case, traced the disease through five generations, and noted that it descended through affected and unaffected females. From a study of the disease in this family it appears that only affected females transmit the disease both to their male and female progeny.

Patients with progressive muscular dystrophy show creatinuria even on a purine-free diet, and patients with myasthenia gravis also excrete small amounts of creatine—a substance not found in normal adult's urine. It is interesting to note that both the patients whose cases are above described excrete small amounts of creatine. On a purine-free diet Case 1 excreted 0·087 g. of creatine in 24 hours (5·785 g. per kg. of body-weight). On a similar diet Case 2 excreted 0·055 g. of creatine in 24 hours (2·799 g. per kg.). In view of the recent successful treatment of the muscular dystrophies [8] and myasthenia gravis [9] with glycine, one patient (Case 1) is being treated with 10 g. twice daily.

My thanks are due to Sir Ashley Mackintosh for his kindness in seeing the cases, and to Dr. W. F. Croll for his permission to publish them.

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CASES OF AURAL VERTIGO AMENABLE TO TREATMENT BY OSSICULECTOMY

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Vertigo is a symptom or disease which is so distressing and often disabling that no mode of approach to its elucidation can be neglected. The family doctor, the general physician, the neurologist, and the ophthalmologist study it from their several points of view and can count their successes, but in many instances it remains for the aurist to ferret out the causal factor, and, as the following cases show, to carry out appropriate means of cure. The means may often be of the simplest nature, but in cases in which post-inflammatory changes have caused fixation of the ossicles or have led to the formation of desquamative masses in the attic and their damming up by these bonelets, the removal of the ossicles offers a direct way out and an end to the vertigo.

Ossiculectomy appears to have been relegated to the category of the "out of date," but I am convinced that in suitable cases it is of the utmost value. Possibly too much has been expected of it as doing away with the necessity for the radical mastoid operation. This it cannot do, but in certain cases presenting symptoms indicating radical procedure the operation of ossiculectomy has relieved these symptoms and shown the radical operation to have been avoidable. Again there will always be room for such operations as obliteration of the labyrinth or section of the eighth nerve on account of vertigo, but before such serious interventions are considered, the possibility of the case being amenable to treatment by the comparatively innocuous operation of ossiculectomy must be carefully considered and the first witness to be called should be the ear itself.

Fairly often the practised eye will detect changes attributable to retractions of the membrane or fixation of parts produced by the residua of inflammation in the middle ear. In some of the cases I am here describing the ossicles obstructed the outlet of the attic and prevented the escape of thickened discharges or cholesteatomatous collections, and in others their fixation led to immobility of an otherwise mobile stapes. In the former the removal of the ossicles permitted the free escape of contents of the attic, with relief from vertigo, headache, and to some extent from dullness of hearing. In the latter the restored mobility of the stapes provided the normal safety-valve for variations of intra-labyrinthine tension, with disappearance of the distressing vertigo.

The number is not very large, although the series has extended over many years, the reason being that the appropriate cases are comparatively uncommon. This is perhaps the reason why they have not forced themselves upon the notice of those who have allowed ossiculectomy to lapse into a disuse from which I have every expectation that it will be withdrawn. The following are the notes of what is as nearly as possible a complete series of the cases in which I have treated aural vertigo by means of ossiculectomy.

Case 1. *Vertigo and epileptiform seizures completely arrested by ossiculectomy.*—A man, then aged 30, was referred to me in 1907 by Dr. Outterson Wood on account of attacks of epileptiform character and intense vertigo accompanied at times by definite loss of consciousness. The attacks were of two kinds, one preceded by a feeling of pressure behind the ear, after which the patient fell over, and the other with absolutely no warning at all, in which he suddenly fell down with loss of consciousness. The attacks came on about three or four times a week. He had had deafness in the left ear since the age of 8 or 9 years, but never remembered having had a discharge. Examination showed a depression, corresponding to a former perforation behind the malleus, in which the stapes was visible with a sunken cicatrix attached to it; it was then noted that there was giddiness when Siegel's suction speculum was employed. He was at first treated with quinine internally and, for his ear, drops to dry up the desquamative products. On March 1st, 1907, I performed ossiculectomy, as the ossicles were not serving any purpose and blocked up the passage from which the desquamative products might escape. From that time he has been entirely free from the attacks. The fenestra ovalis is now exposed, the stapes having become detached. Labyrinthine reaction to cold is excessive, and suction with Siegel's speculum acting on the exposed fenestra ovalis causes such intense postural disturbance as almost to make him fall off his chair. (Shown last before Neurol. Sect., Roy. Soc. Med., Nov. 24th, 1932.)

Case 2. *Vertigo, probably epileptic, with cholesteatoma, greatly relieved by ossiculectomy.*—A school-mistress, then aged 40, first seen in April, 1910, complained of attacks of vertigo with loss of consciousness and occasional double vision, two or three times a month for several months. At 4 o'clock the previous morning she had an attack in which her arms became stiff for about a minute; this was followed by very loud snoring and she was unconscious for about 15 minutes; at noon she had a very light dinner followed by vomiting and during the whole day suffered severely from headache. She occasionally lost the vision of the right eye for about two minutes and had attacks of double vision two or three times a week. The ear had discharged with pus on and off since childhood. On examination the left ear was found full of cerumen and the hearing for the whisper was reduced to 3 in.; after this was removed she could hear at 2 ft., but there was found to be a large perforation in the attic through which desquamative material protruded; it was obvious that the cholesteatomatous material was being dammed up by the ossicles. Ossiculectomy was performed, and from that time she has been free from pain and any vertigo beyond an occasional slight "swimminess." This is probably a mild form of epilepsy and is kept off by small doses of luminal. At present she enjoys good health. The hearing is about the same as before the operation. (Shown Otol. Sect., Roy. Soc. Med., Oct. 21st, 1921.)

CASE 3. *Vertigo caused by cholesteatomatous formations, cured by ossiculectomy.*—The wife of a medical man, then aged 40, had had discharge from the right ear for many years. When seen in 1915 she was suffering from headache and attacks of giddiness. The anterior half of the membrane was absent and cholesteatomatous material protruded through the perforation. She was relieved for a time by the instillation of alcohol drops, but her giddiness became unbearable and I removed the ossicles in November, 1915. Since then the vertigo has entirely disappeared. The hearing is better than before the ossiculectomy. At present she is in good health.

FIGS. 1 2 3 4

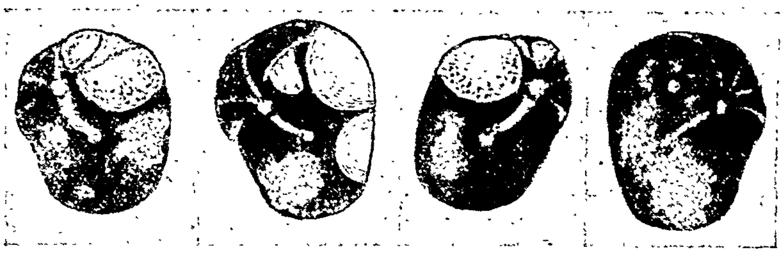

FIG. 1 (Case 4).—Cholesteatoma protruding from attic and below. FIG. 2 (Case 8).—Postero-superior perforation; granulations; white skin indicating presence of cholesteatoma. FIG. 3 (Case 11).—Cholesteatoma protruding from large attic opening. FIG. 4 (Case 12).—Membrane round head of stapes indrawn; ossicles fixed.

CASE 4. *Vertigo and headache caused by cholesteatoma in the attic.*—A maid, then aged 21, was the subject of violent attacks of giddiness and headache with suppuration in the left ear of several years' standing. The lower part of the membrane was absent and there was also a large perforation in the region of the attic; a mass of cholesteatomatous material bulged from the latter opening and also below and in front of the neck of the malleus (Fig. 1); it was very difficult to remove these masses and they could not be spontaneously extruded owing to the obstruction caused by the presence of the ossicles. Her hearing was reduced to a few inches for the whisper. After the removal of the ossicles in 1918 the attacks of vertigo disappeared and have not returned; there is very little discharge from the ear and only occasional slight headache. The hearing has considerably improved. (Shown Otol. Sect., Roy. Soc. Med., Nov. 21st, 1919.)

CASE 5. *Headache and vertigo due to cholesteatoma, temporarily relieved by incomplete ossiculectomy, permanently relieved by the complete operation.*—The patient, a man aged 38, suffered from headache and attacks of vertigo which rendered him incapable of following his profession. He was in a state of pitiable depression and found life almost unbearable. His was a case of cholesteatoma limited and, as it were, dammed up by the ossicles. Very slight relief followed the desiccating effect of alcoholic drops and (in 1919) ossiculectomy was decided on. Owing, however, to anæsthetic difficulties and to imperfect adrenalisation the malleus alone was extracted, the incus remaining behind. The patient was considerably relieved and recovered his confidence in himself to such a degree as to get married, but before long his vertiginous attacks recurred. Under careful local anæsthesia I removed the incus and his headache and vertigo disappeared completely.

CASE 6. *Vertigo from disease in attic, relieved by ossiculectomy.*—A middle-aged pensioner had suffered from deafness and discharge from the right ear of about 2½ years' duration. In August, 1919, he developed attacks of giddiness. There was evidence of disease in the attic. As his hearing was extremely poor I decided to try the effect of ossiculectomy before resorting to the radical mastoid operation, the necessity for which seemed very probable. A week later he reported himself as feeling much easier, and when seen a few months later the tympanum looked very clean and healthy and he was free from giddiness. (Shown Otol. Sect., Roy. Soc. Med., Nov. 21st, 1919.)

CASE 7. *Vertigo, with fixation of the ossicles, cured by ossiculectomy.*—A bank clerk, aged 24, suffered from frequent attacks of giddiness so severe as to make him fall down. He had chronic suppuration in the left ear, which was satisfactorily dealt with by a modified mastoid operation, but the vertiginous attacks persisted and it was found that they were excited by the slightest pressure on the right tragus. The right malleus was found to be absolutely tied down to the promontory by cicatricial adhesions. After the removal of the ossicles the vertigo disappeared almost entirely and it could no longer be induced by pressure on the tragus. The probable explanation of the relief is that the malleus fixation rendered the incus and stapes immobile and that the pressure of air when the tragus was pushed in acted upon the membrane of the round window to an abnormal degree, producing extreme disturbance of the internal ear owing to the loss of the safety-valve action of the stapes in the fenestra ovalis. As soon as the ossicles were removed, the fenestra ovalis recovered its mobility and again acted as a safety-valve, with disappearance of the vertigo. The hearing-power for the whisper on the right side improved from 5 ft. (before) up to 20 ft. (after the operation) when the opposite ear was deafened by means of Bárány's noise machine. (Shown Otol. Sect., Roy. Soc. Med., Jan. 19th, 1923.)

CASE 8. *Deafness, headache, and giddiness causing incapacity to carry on her profession of teaching. Completely relieved after extraction of ossicles.*—A missionary teacher, then aged 48, had been sent home from India on account of her aural trouble. For 30 years she had suffered from discharge from the left ear with severe giddiness on the slightest interference, such as syringing. The postero-inferior third of the membrane was absent. Some fleshy granulations protruded along the posterior margin of the tympanic ring and, between the malleus and these granulations, there could be seen white skins which indicated the presence of cholesteatomatous formations in the attic (Fig. 2). I forced out a polypus and removed it with a fine snare. The vertigo increased and only ceased completely when, in January, 1924, I performed ossiculectomy. She returned to India where she continued her profession as a teacher. In a letter dated March, 1930, she stated that she had had no return of her trouble. Hearing the same before and after operation. (Shown Otol. Sect., Roy. Soc. Med., March 8th, 1924.)

CASE 9. *Otorrhœa with headache and slight giddiness. Complete disappearance after removal of the ossicles.*—A man, aged 37, complained of discharge from the ear and headache dating from before the war. Since the war he had suffered from giddiness and "fear of living" which interfered with the performance of his duties as a clerk. I found a mass of desquamative products dammed up by the ossicles. The use of alcohol drops had little effect, and it was only after extraction of the ossicles in October, 1926, that he obtained relief with very little discharge and better hearing than before the operation. He carries on his work with no difficulty and with a feeling of well-being such as he had not experienced before.

(Shown at meeting of Post-Graduate Hostel, Nov. 1st, 1926.)

CASE 10. *Otorrhœa, deafness, slight vertigo. Recovery after removal of ossicles.*—A middle-aged lady had suffered from deafness and discharge on the left side, with slight giddiness, since childhood. The meatus was filled with pus mixed with cerumen. The inferior half of the left membrane was replaced by an adherent cicatrix. Between the malleus and the postero-superior border of the tympanic ring there was a large orifice filled with cholesteatomatous material which originated in the attic. She used alcohol drops for several months and eventually submitted to the operation of ossiculectomy which I had recommended. In December, 1926, I removed the ossicles and three months later there was no discharge, no giddiness, and great improvement in the hearing, the whisper being heard at 5 in. before the operation and at 20 ft. after it.

CASE 11. *Severe vertigo from attic cholesteatoma. Cured by ossiculectomy.*—A young man, aged 30, presented himself at the hospital in a state of such extreme giddiness that he could not walk without the help of a companion. He had been in bed for six weeks on account of the giddiness with vomiting and headache. He had suffered from discharge and deafness from childhood and had been subject to the giddiness for some years. There was a large opening in the attic filled with white cholesteatomatous masses (Fig. 3). After this had been cleared out and salicylic and alcohol applied, the giddiness disappeared. The discharge continued and reaccumulations took place, with giddiness, from time to time, requiring repeated clearance. In May, 1927, I removed the ossicles and from then onwards he has been free from accumulations and giddiness, the discharge becoming very slight and being kept in check by the use of alcohol drops. Hearing, if anything, slightly better than before operation. (Last shown Neurol. Sect., Roy. Soc. Med., Nov. 24th, 1932.)

CASE 12. *Attacks of vertigo. Completely relieved by ossiculectomy.*—A dental surgeon, aged 57, was referred to me on Jan. 1st, 1931, by Sir James Purves-Stewart for examination in case there might be an otological cause for attacks of vertigo occurring almost every other day and with greater severity during the last two months. There was no unconsciousness and he had never actually fallen. The attacks were ushered in by a feeling as if he had received a blow on the right side of the head with an inclination to fall to the right in slight attacks. There was no evidence of involvement of any part of the nervous system, the Wassermann reaction was negative, and there was no detectable abnormality except middle-ear deafness on the right side. One physician had attributed the vertigo to excessive tobacco-smoking and abstinence from this was practised for a month without any benefit beyond a lessening of the frequency of the attacks.

I found in the right ear intense indrawing of the membrane in front of the handle of the malleus which was drawn back and fixed to the inner wall of the tympanum. The head of the stapes was a little lower than normal, and the membrane around it was indrawn (Fig. 4). Whispered voice was only heard at 1 in. when Bárány's noise machine was applied to the good left ear. Bone-conduction was diminished and Galton was lowered to 3·1 as against 1·5 on the sound side. There was nystagmus to the left and slight Rombergism to the right. The cold air labyrinth reaction was normal as also the galvanic. Past-pointing was normal. The most obvious abnormality was the fixation of the ossicles. Ossiculectomy was accordingly decided on and I removed the malleus and incus completely in February, 1931. From that time on he was free from his old paroxysms. In July, 1931, and January, 1932, he reported that he had no discomfort and no trace of giddiness.

The operation is described more or less wholeheartedly in the text-books of otology, and obviously no practitioner would undertake it without having had considerable experience in intra-aural manipulation. I need, therefore, only say that for the extraction of the incus the hooks devised by Ludewig and Zeroni are often indispensable, but the one known as Hoffmann's has been in my hands the most generally efficacious (Fig. 5). This, after extraction of the malleus, is passed into the attic, hugging its inner wall, and is turned slightly backwards, then drawn outwards so as to catch the inner surface of the incus. Its edge is sufficiently sharp to adhere to the bone which is then drawn downwards and outwards.

The question naturally arises as to the effect on the hearing of the removal of the ossicles. In the normal subject such removal would probably reduce the hearing to about 6 ft. for the soft whisper, a useful but a much diminished amount of hearing-power. In a patient having a greater degree of hearing ossiculectomy would, therefore, be undesirable unless called for by a major disability, the removal of which rendered a moderate reduction of hearing a matter of relatively minor importance. In most of the cases in which ossiculectomy is required the hearing power is less than this and the operation, while making it no worse, sometimes makes it better than before, as in the cases I have narrated.

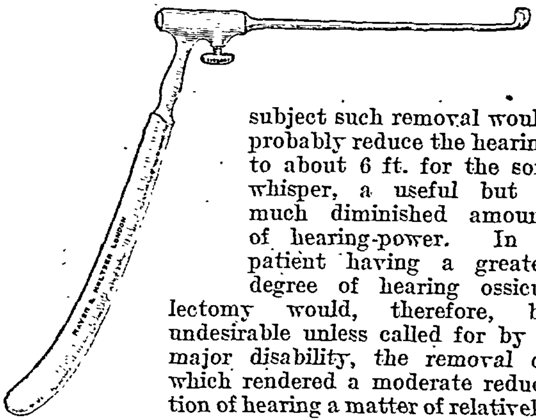

FIG. 5.—Hoffmann's incus curette.

I do not wish to suggest that the indications for ossiculectomy are very frequent or that they often do away with the call for the mastoid operation. Indeed, it is most important that valuable time should not be lost in watching for the results of ossiculectomy instead of proceeding to the radical operation. At the same time the indications are often very clear and I think the results above narrated show that they should be acted on.

A SERIES OF CASES OF

DUCT PAPILLOMA OF THE BREAST

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THE comparative rarity of duct papilloma of the breast and the differences of opinion about its treatment seem to justify the publication of a series of cases. The divergent views held by continental workers as to the malignancy of the condition have been summarised by Knoflach and Urban[1] as follows: "Erdheim, Risak, and others consider these tumours to be absolutely benign, while Klose, Sbering, and others look on them as precancerous."

A study of the literature, the bibliography of which is given by Cheatle and Cutler,[2] has led us to the following conclusions:

1. It is only of recent years that the duct papilloma, a benign tumour, has been clearly distinguished from the duct carcinoma, which is a malignant one.

This has led to the belief that the papilloma is potentially malignant and the duct carcinoma relatively benign.

2. The general recognition of the frequency of multiple duct papillomata is also of recent date; statistics of cases where this possibility has been specially considered are few in number. Hæmorrhage from the nipple after local removal of one papilloma has been taken to mean a recurrence of the growth, whereas it was really due to another papilloma not detected at the operation. Hart,[3] in a series of 95 cases of duct papillomata, found multiple tumours in 37 per cent. Cutler,[4] in 11 cases, found two in which the disease was bilateral and two in which the tumours were multiple. This question of multiplicity has not been sufficiently considered by those who advocate local removal of the papilloma.

3. Some authors (e.g., Knoflach), by stressing the diagnostic value of hæmorrhagic discharge from the nipple in cases of papilloma, have created the impression that this physical sign generally indicates an innocent tumour. It is true that in any series of cases of papilloma a discharge from the nipple, generally blood-stained, is present in the greater proportion of the patients; but the converse conclusion—that a blood-stained discharge indicates papilloma—would be very misleading. The figures available show that the chances of the causative agency being innocent or malignant are about equal. Judd (quoted by Miller and Lewis [5]) in 50 cases found 54 per cent. to be carcinomata; Adair,[6] in 108 cases in which the presence of red cells in the discharge was established microscopically, found 49 carcinomata and three sarcomata.

4. The majority of duct papillomata are innocent tumours, but in any series of cases there are always some which show definite evidence of malignant change, and others which are associated with a diffuse proliferation of the epithelium of the surrounding ducts suggestive of carcinoma. More evidence is needed to guide the surgeon regarding the operation to be done.

We have for these reasons examined the material available at the Elizabeth Garrett Anderson Hospital with a view to determining the proportion of cases in which (1) multiple papillomata were present; (2) malignant growth had occurred; and (3) the histological appearances of the tissue surrounding the tumour were suggestive of malignancy.

SOURCE AND NATURE OF THE TUMOURS EXAMINED

The material has been collected during the last 20 years. Of the earlier cases we possess only the microscopic sections and the case-histories; during the last ten years the operation specimens have been preserved. These specimens have been re-examined in serial sections of about 2 mm. in thickness, cut by means of a bacon-slicer. This machine has been of great assistance in locating the papillomata, some of which had not been found by the ordinary method of incising suspected areas. The slices obtained give a very clear picture of any associated lesions and of their extent. They can be stained in bulk and cleared in alcohol and xylol to show the relations of the ducts and the glandular tissue. This is a simple modification of the method of examination by serial sections which is possible for any small laboratory. Altogether 40 specimens have been examined from 38 patients. Of these, 28 were benign, 4 were undoubted carcinomata, and 8 showed microscopic papillomata with diffuse proliferation of the epithelium of the surrounding ducts which was suggestive of malignancy.

BENIGN TUMOURS

There are 28 specimens from 26 patients; two cases have been bilateral, and we have the clinical history of 24 of these patients.

Age.—The youngest is 19 years and the oldest 64.

Tumour.—Clinical examination revealed a lump in 17 of the cases; 14 patients had been conscious of the presence of a lump for periods varying from three months to nine years, and in seven cases it was the tumour which caused the patient to seek advice.

Discharge from the nipple was present in 17 cases. Two of the patients who did not show discharge from the nipple had large blood cysts in the breast, and another had a large serous cyst, so that there was evidence of secretion from the tumour in 20 cases. The discharge was blood-stained at times in 11 cases.

Mobility.—Only in two cases was there any attachment to skin or fascia.

Operation performed.—In 23 cases a simple excision of the breast was done; in one case this was combined with removal of the axillary glands, and in another case a radical amputation was performed because the tumour was attached to skin. In one case only was the operation confined to a local excision of the tumour. This patient has failed to report since operation.

After-history.—Of the 26 patients 18 have been traced; two are recent cases and two are dead—one of tubercle, the other of an unknown cause. One patient returned 14 months after operation with a similar condition of the other breast. The remaining 13 cases are known to be well for periods varying from eight months to 11 years after the operation.

Pathological findings.—We define a duct papilloma as a tumour springing from the side of a duct and confined within its wall. Its size, shape, and position may vary, and it may have one or more attachments to the wall of the cystic space in which it lies. It is composed of a connective tissue core covered by epithelial cells. The tumours of the intracanalicular type, in which the connective tissue predominates, have not been included.

Of the 28 specimens, nine were found to show multiple papillomata, and in two patients both breasts were affected. Nineteen specimens were available for slicing; additional papillomata were found by this means in five cases. These were cases in which the most important tumours had not been detected at the original examination, although microscopic papillomata of the nipple had been demonstrated. Papillomata are not easy to feel, as they are often softer than the surrounding breast tissue. They may not be more than one-third of an inch in diameter, so that an incision may easily miss them, particularly with a fat breast and a tumour lying in a duct outside the margin of the areola. A certain amount of cystic change was found in every breast in which there was glandular tissue present; in some of the elderly patients the breast tissue was represented by thickened and dilated ducts in a mass of fatty tissue. The cysts were generally small and closely packed, the whole resembling the mesh of a sponge. In some cases the cysts were larger, varying up to one inch in diameter. The cystic portions occupied one-third to one-half or even the whole of the breast. Microscopic sections of the "spongy" breast tissue showed dilatation of the ducts, and of some of the alveoli of the lobules. In some of the recent cases, where the relations of the papilloma had not been destroyed by removal of the greater part of the papilloma for microscopic section, it is possible to see that the "spongy" area lies in direct relation to the duct containing the papilloma, the appearance strongly suggesting that the cystic dilatation is due to the pressure of the secretion behind the papilloma. The intermittent discharge from the nipple which occurs in these cases is due, not only to the hæmorrhage which takes place at the surface of the papilloma, but also to the normal secretion occurring in the glandular tissue. Under normal conditions this escapes freely and is too scanty to be noticed, but when the exit from the duct is blocked, it causes dilatation of the duct and, later, of the alveoli, and periodically discharges at the nipple in an appreciable quantity.

TUMOURS SUGGESTING MALIGNANCY IN MICROSCOPIC APPEARANCE

In this group there were eight cases.

Age.—The youngest was aged 23 and the oldest 49.

Tumour.—This was present in seven out of the eight cases, and is generally described as a hard, irregular mass, not in such close relation to the nipple as in the previous group. The diagnosis made was usually "mastitis."

Discharge from the nipple.—This was found in two of the cases, and these two both had, in addition to the diffuse changes, papillomata visible to the naked eye.

Mobility.—No case showed any attachment to the skin or fascia.

Operation.—In four cases removal of the breast alone was done. In one case, following the pathological report, a radical amputation was performed. In three cases there was an excision of the tumour alone, the patients refusing the further operation that was advised after examination of the tumour.

After-history.—Two cases are recent, and one has not been traced. The other five are well for periods varying from four months to eleven years.

Pathological examination.—Examined by the hand lens, the area of breast affected was seen to consist of closely packed cysts, varying in size from 1 mm. to 10 mm. in diameter. Thickened ducts, apparently filled with white or yellow secretion, could be seen in the centre of the mass. In two cases, papillomata 2 cm. by 1·5 cm. in size were to be seen; these were the two cases with a history of discharge from the nipple.

Microscopic sections showed that the ducts contained multiple minute papillomata and also solid columns of proliferated epithelium. The cells stained well, but no infiltration of the walls of the ducts was found. The appearances were so similar to those seen at the edge of an intraduct carcinoma that removal of the breast was advised in every case.

MALIGNANT TUMOURS

There were four cases in this group. The patients all presented the clinical signs of carcinoma. Their ages were 37, 67, 72, and 75 years respectively; radical amputation of the breast was performed in all except the patient of 75 years. These breasts showed a papilliferous growth which was infiltrating the wall of the cyst. The microscopic sections confirm the naked-eye appearances.

THE TREATMENT OF DUCT PAPILLOMA

In the present state of our knowledge it is probably safest to advise removal of the breast in the great majority of cases. Where the clinical signs are those of malignancy, the radical operation will be performed. In other cases simple complete removal of the breast will be sufficient. We have no knowledge of the results of treatment by radiation, and are therefore discussing only the operation to be selected. The tumour caused by multiple diffuse papillomata is, in our experience, usually removed locally as a case of "mastitis." The condition having been diagnosed by frozen section or otherwise, the surgeon should proceed to removal of the whole breast.

When the clinical findings are of a discrete mobile tumour at or near the periphery of the areola, pressure on which produces secretion at the nipple, we may assume we are dealing with an intraduct papilloma. In this case we have the choice of doing a local operation, but, since at least 30 per cent. of these simple papillomata are multiple, the patient must fully understand that the symptoms may not be cured, and that a further operation may become necessary. Some patients will prefer to have the breast off at once. The local operation is planned to remove the tumour and the glandular tissue drained by the duct containing it. A radial segment of breast is removed, the apex being at the nipple and the base being about one inch wide and touching the margin of the breast. If a palpable tumour is present behind the nipple, its removal will probably interfere with the neighbouring ducts, so that excision of the breast is the right policy.

When no tumour can be found, but the history of intermittent discharge from the nipple makes the presence of a papilloma almost certain, removal of the breast should be done. Our experience of the difficulty of finding these small tumours, even on systematic slicing, makes us think that attempts to localise them by exploratory operations are not likely to meet with much success.

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RECENT ADVANCES IN THE TREATMENT OF LUPUS VULGARIS

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(With an abstract of an article on the Construction of the Finsen-Lomholt Lamp)

Finsen light treatment has long been generally acknowledged as the most useful and specific treatment for the majority of cases of lupus vulgaris. A research fellowship has given me the opportunity this year of visiting the Finsen Light Institute in Copenhagen where this treatment originated and is still in progress, and of studying the work as it is being carried out there to-day.

During the past twelve months there has been a revolution of the older methods; a new lamp has been constructed which has superseded and replaced all the older types of lamp because of its easier mechanisation, cheaper running expense, and greater biological and clinical efficiency. The general features of the lamp are described in an appendix to this paper. Its essential principles are the same as in the old Finsen and Finsen-Reyn lamps, but there is more effective filtering of the rays and the mechanisation of the control and application excludes the variable personal factor and allows a saving of staff in time, number, and expense. One of the new lamps is in fact equal in administrative and clinical value to three of the old lamps. Each individual "treatment" is effected more speedily and more surely. A patient may have four to six treatments a day, and day after day in quick succession, until a wide area is attacked and "cured." I have seen in this way extensive lupus cleared out completely or almost completely in the course of three months; in certain cases this speeding-up has turned the scale in favour of the patient in a case otherwise apparently hopeless. Further, the result seems more permanent in the cases treated with the new lamp. Art in the treatment is more readily acquired than with the old lamp. Some striking illustrations of what the results may be have appeared in *Ugeskrift for Laeger* (1932, p. 946).

General carbon arc lamp baths are given to most patients in addition, and other treatments as necessary. Patients are never discharged as cured. According to their state they are advised to return for review in 3, 6, or 12 months' time, and if still clear to return in two years. If they do not come again within the specified time they are written for. Signs of recurrence are itching, scaling, and nodulation, felt and then seen, and in this order. Wherever there is even suspicion of disease treatment is given. The mucous membranes are always examined. Lupus in nose and throat may be treated by the lamp just as readily as the skin, special applicators being available.

As the effect of the treatment is unspecific and depends upon factors not yet wholly understood, but partly upon the depth of the skin action, it has been tried in Copenhagen, and successfully tried, in certain other conditions—e.g., certain types of lupus erythematosus with deep infiltration, cases of nævus flammeus and Boeck's sarcoid, and a few resistant cases of eczema. Differential diagnosis is not always easy. Confusion may occur with lupus erythematosus, rosacea cumacne, Boeck's sarcoid, syphilis, and occasionally with other conditions. One of the most useful points in differential diagnosis is the consistency of the nodule; a lupus nodule is readily pierced by a probe.

Other treatments than light are of occasional value in lupus work, but for the most part light alone, general plus local, will cure. General light alone will not cure, though arrest may occur. Infra-red photography has been tried in Copenhagen, but has not yet proved its value.

I wish to thank Prof. Axel Reyn, president of the institute, and Dr. Lomholt, chief of the dermatological department, for allowing me facilities for detailed study over a period of three months.

THE FINSEN-LOMHOLT LAMP

(*Abstract of an article on the lamp construction by Dr. Svend Lomholt*)

THIS lamp was constructed to replace the original Finsen apparatus and the Finsen-Reyn lamp. Like these two, it is designed for the local treatment of skin lesions and especially the various forms of skin tuberculosis with concentrated carbon arc light.

The construction of the lamp is based on the observation that the therapeutic effect of this treatment depends almost entirely upon the ultra-violet rays. By using a double colour filter it was found possible to absorb not only the dark heat rays but also the luminous rays, with the exception of some of the violet rays, without reducing the effective ultra-violet rays by more than about 20 per cent. By passing the carbon arc light through this filter, a mixture of rays is obtained very rich in ultra-violet energy (about 75 per cent.), whereas the energy with the old apparatus does not amount to more than about 15 per cent. of the total radiation energy. In this way it is possible to carry out a much more intensive irradiation of the skin without the risk of burns from the heat rays.

The required increase of the radiation intensity is obtained by placing the light source, the positive crater of the arc light, considerably nearer the concentration apparatus. In this new lamp the concentration lenses consist of the perfectly thermo-resistant fused silica, instead of the lenses of the brittle natural quartz as employed previously. Thus it has been found possible to reduce the distance between the crater and the front lens from about 100 mm. to 45 mm.

The construction of the lamp was improved by a firm attachment of the carbons, and by connecting the carbon arc with the concentration and compression apparatus. Thus it was found possible to obtain a firm adjustment of these three parts so that the handling of the apparatus was simplified. The great increase of the radiation intensity permits cutting the radiation time down to about half the time required with the old apparatus.

Clinical and Laboratory Notes

SUDDEN DEATH FROM PANCREATIC HÆMORRHAGE

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HÆMORRHAGE into the substance of the pancreas is sufficiently rare, and may be of so much medico-legal interest, as to warrant a report of the following case in Mauritius.

An Indian, aged 20, was performing his usual manual work as labourer on a sugar estate on March 11th, 1933. He was in apparently perfect health, and was a well-nourished man of the usual physique of his race. On March 12th fell an Indian religious festival in which he took part. His share in the proceedings consisted of singing and dancing all day with a party visiting sundry houses, at many of which the performers were regaled with rum. No solid food was taken during the day. At 7 P.M. he, together with four compatriots, had a drink of rum at a house, and a few minutes later complained of acute pain in the abdomen. He was assisted to a neighbouring Indian temple and placed on a couch, where he collapsed and died within 20 minutes. Poisoning was immediately suspected and the usual steps taken, but the other four men who partook of rum from the same bottle suffered no ill-effects other than those due to their libations during the course of the day.

A *post-mortem examination* was made 24 hours after death at the request of the police. On opening the abdomen nothing superficially abnormal was noted. The chest was next opened, but no gross lesions were detected. The œsophagus was dissected away and ligated at the cardiac end of the stomach; on attempting to ligate the pyloric end of this organ a large blood clot was noticed in the duodenal curve, which proved to arise from hæmorrhage in the pancreatic region, the hæmorrhage being localised to that organ and its immediately surrounding tissues.

The pancreas was carefully examined and was found distended with blood clot; no evidence of suppurative inflammation, gangrene, or antemortem necrosis of the organ could be discerned with the naked eye. Closer examination of the abdomen failed to reveal the presence of free fluid in the peritoneum or of pathological lesions of the small intestine or other abdominal viscera; no evidence of neighbouring fat necrosis due to the action of liberated ferments could be found. The stomach and œsophagus smelt strongly of rum, and no solid food residue was found in the former. The liver, kidneys, lungs, heart, brain, and other organs appeared normal. On section the pancreas was found to be infiltrated with blood, more particularly towards the head, and a large clot was found exuding from a small rupture on the anterior surface of the organ in this region. Microscopical examination of sections revealed a limited area of necrosis in the neighbourhood of the rupture, and it appears that there had been a lesion in that region for some time before death. No obvious cause for a localised ischæmia could be found.

Death was certified as being due to natural causes, in the form of the so-called acute hæmorrhagic pancreatitis. The apparently complete lack of symptoms until less than half an hour before death is of note; earlier immediate symptoms may have been obscured by the semi-intoxicated condition of the subject, coupled with the religious fervour under which he was labouring at the time. This case, in its history and post-mortem findings, closely resembles that described by Maconie[1] from Shanghai, in which death occurred even sooner after the onset of acute symptoms.

A CASE OF CHOREA TREATED WITH EVIPAN SODIUM

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A boy, aged 9, was admitted to hospital on August 22nd, 1933. There was a history of twitchings of both arms, both legs, right side of face and body for two weeks, but no history of rheumatism in any form. The tonsils had been removed one year previously.

On admission the child was pale, ill-nourished, and very nervous; he had typical choreiform movements of face, arms, trunk, and limbs, even at rest, more marked on the right side of the body than on the left. The heart was quite clear. No other rheumatic manifestations were present. The throat was a little red. The tonsils had previously been removed.

The child was put in a cot next to the partition and screened off. He was given a full diet, with halibut-liver oil and malt, three times daily, and a mixture containing arsenic, iron, and calcium lactophosphate three times daily. The throat was painted with Mandl's paint. After two days, however, the condition was exactly the same as on admission. The movements were present nearly all the time the child was awake; he was still extremely nervous and he did not sleep well. The only apparent change was in the throat, the redness of which had disappeared.

On August 24th he was given 1 c.cm. of Evipan sodium by the intravenous route. The injection was given slowly, and by the time 1 c.cm. had been given he was asleep.

After about half an hour he woke up but remained quiet without any convulsions for the rest of the day. He also slept better that night. The following day the twitchings were again present but not so frequent or so severe as before his injection. On August 26th the twitchings were again very severe and his restlessness had returned. He was given another injection of 1 c.cm. with results similar to those following the first injection. On this occasion, however, the effect appeared to be more prolonged—that is to say, although he slept for only half an hour his symptoms were definitely improved for three days instead of two.

After three days, that is, on August 29th, it became necessary to transfer him to another ward. Here he was again put in a corner cot and screened off, but his symptoms returned and on Sept. 3rd another 1 c.cm. of evipan was given. Although the immediate effects of this injection were similar to the two previous ones, his symptoms when they returned were very much less severe. He got no choreiform movements at all while he was at rest, although they were present as before on movement. He was also much less restless, and it was found possible to remove the screens for a gradually increasing period each day without causing any restlessness, excitability, or exacerbation of the symptoms.

On Sept. 9th he had to be transferred back again to the ward from which he had originally come, and the change caused a very definite exacerbation of the symptoms, upsetting him more than might have been expected. The evipan was repeated on Sept. 11th, 2 c.cm. being given on this occasion. This injection was given about two hours before he was in the habit of going to sleep for the night. He immediately went off into a perfectly natural sleep from which he did not awake until the following morning. During the four following days he was very much better. There were no twitchings of his face, body, or legs, but choreiform movements were perceptible when the hands were extended.

On Sept. 16th 2·5 c.cm. of evipan were given. Since that day there have been no choreiform movements at all. He can protrude his tongue and bring it back slowly into his mouth. He has not been at all restless, and he talks and plays with the other children without getting excited. His pulse-rate throughout has remained between 80 and 90 per minute, except on one or two occasions when it has gone up to 100. He is now perfectly quiet.

It is realised, of course, that many cases of chorea with no treatment other than rest in bed might improve in three or four weeks; this, however, was a severe case, and one moreover in which a preliminary period of rest caused no improvement. It suggests that evipan can be used harmlessly in small doses in children, and that it has a definite value in checking the tremors of chorea. The remedy is being tried in other cases.

Unauthorised Hospital Collections.—King Edward's Fund has issued a warning to London hospitals against schemes for the collection of "waste." "Investigation has shown," says the circular, "that some of these schemes are primarily run for private profit." It is suggested that, for the protection both of the hospitals and of the public, special care is at present needed to avoid any action by hospitals which could be represented as authorising the use of their names, unless they are satisfied of the bona fides of the applicant or his society. The Charity Organisation Society states that it has investigated 15 such schemes without finding one of which it could say "this is a genuine attempt to help charity, and we can recommend it."

Radcliffe Infirmary, Oxford.—The report for 1932 states that over 1000 applications were received for training as nurses, as compared with 319 in the previous year. The extensions which came into use during the year included the new nurses' home, two theatres, a surgical ward for women and two for men. A new X ray department is being built, and an existing building is being converted into an isolation ward. The receipts from the weekly contribution scheme exceeded £37,000. A small block of six rooms has been erected for paying patients, in addition to six single rooms in the maternity department, and a further block of 16 rooms is to be provided for paying patients in connexion with the main hospital. There were 3492 patients treated to a conclusion in the infirmary, which had just under 10,000 new out-patients. The total income was £50,856, and the bank overdraft is £8666.

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[1] Maconie, A. C.: Brit. Med. Jour., 1926, ii., 638.

MEDICAL SOCIETIES

TUBERCULOSIS ASSOCIATION

THE subject chosen for the conference held in London from Oct. 26th to 28th was the diagnosis, treatment, and prognosis of

Cavities in Pulmonary Tuberculosis

Dr. JANE WALKER presided, and Dr. W. BURTON WOOD (Victoria Park) opened the discussion. The question he had been set to answer was: Do annular shadows represent air spaces in the lungs? To this there could be only one answer: they did. There were several points in proof of this assertion. (1) Annular shadows were peculiar to pulmonary tuberculosis, which was the great cavitary disease. (2) These round shadows were closely associated with tubercle bacilli in the sputum. When they were seen in the X ray photograph, in at least nine cases out of ten, tubercle bacilli were present in the expectoration; and conversely, when the cavity was no longer patent the bacilli disappeared at almost the same time. (3) A cavity of this type might break down again with tubercle bacilli in the sputum. (4) The shadows were not annular but spherical, as could easily be seen by moving the position of the patient. (5) Annular shadows on healing left a permanent scarring on the lung. During A.P. treatment the cavities contracted concentrically. (6) Though direct pathological evidence was lacking, indirect evidence was supplied by a study of the thickened wall cavity. They could fairly assume that soft exudative diseases were associated with soft-walled cavity. Soft-walled or annular cavities being characteristic of early disease, they could not be found on post-mortem examination of patients dying from pulmonary tuberculosis.

Dr. J. V. SPARKS (Victoria Park) said he had been asked to answer certain questions in relation to annular shadows. First: "Are annular shadows air spaces?" To this the answer was Yes, but with the qualification that although every annular shadow seen radiographically contained air within it, such air-containing space was not necessarily due to true cavity formation. Annular shadows were sometimes seen in emphysema, where they were formed by emphysematous bullæ; also in bronchiectasis, where they were formed by localised dilatation of the bronchi; also in tuberculosis, abscess, and some forms of pulmonary neoplasm where an air space was caused by destruction or absence of lung tissue. Therefore *in answer to the second question*: "Are there two varieties of cavities?" he would reply that there were many. Question three was: "What are the differences in the varieties of cavity formation?" In the case of tuberculous cavities, the differences in appearance were (*a*) in regard to size and shape, and (*b*) in the degree and type of changes in the adjacent lung. If there was no infiltration in the surrounding lung, the cavity would present a dense irregular margin, the density of its centre possibly not differing in degree from the surrounding lung field. If the cavity was surrounded by solid lung, it would be seen as a clear-cut area of translucency; if it reached the costal margin there would be evidence of a pleural reaction. Cavities might be easily recognised when they were wholly in the lung field, but were liable to be overlooked when they were paravertebral, near the hilum, posterior to the heart, or below the level of the domes. Annular shadows in the hilar region were sometimes mistaken for cavities when they were really due to shadows produced by a conglomeration of bifurcating bronchi. Apart from oblique, lateral, tangential, and stereoscopic views, the chief methods of examination which they had at their disposal were: (1) subsequent examination after an interval, and (2) diagnostic pneumothorax; both of these were of great value. It was, he thought, unusual for lipiodol to enter an annular shadow when injected via the trachea.

Dr. G. T. HEBERT (St. Thomas's) showed a diagrammatic representation of the four types of cavity, on the analogy of the solar spectrum. At one end was the *fibrotic cavity, which was more or less round*, with smooth walls, and at the other end a thin line of necrosis representing the annular shadow. Between these were the indurated necrotic type, which came next to the fibrotic, and thirdly the recent necrotic. There were, however, many intermediate gradations. With regard to the need for treatment, the fibrotic *type at one end and the annular shadow cavity at* the other probably did not need it; the two intermediate types did. Although necrosis was the main factor in cavity formation, other possible factors influencing the X ray picture were inflation, elasticity of the lung, and patency of bronchus.

Dr. ANDREW MORLAND (Mundesley) discussed the criteria for differentiating cavities from annular shadows. Ordinary cavities resulted from breaking down and evacuation of caseous infiltration; this being an indication of a high degree of allergy and poor defence, toxic symptoms in some form were invariably present. An early cavity could not be diagnosed by physical signs, but X rays showed the gradual appearance of less opaque areas in the substance of dense infiltration, these areas tending to coalesce. In shape the cavity tended to take up that of the original patch of infiltration, but frequently enlarged beyond it. When *annular shadows first* appeared in the case of patients undergoing sanatorium treatment, some change for the worse was observed in the general health. Physical signs were absent. These round cavities were mostly associated with early disease, being rare in fibrotic cases. A typical feature was their rapid appearance often followed by an equally *rapid disappearance* and sometimes reappearance. Although a few persisted and turned into chronic fibrotic cavities, the majority disappeared, leaving only a small scar. In cavity formation two factors were at work: destruction and infiltration, sometimes one predominating and sometimes the other. A purely destructive cavity hollowed out a caseated portion of lung tissue and assumed the same shape as the previous infiltration. A round cavity (annular shadow) was much larger than the pre-existing infiltration, and underwent rapid fluctuation in size; *but a slight degree of caseous infiltration* was likely to be present in the wall which might *result in a chronic cavity*.

Dr. S. R. GLOYNE (Victoria Park) then showed a series of lantern slides illustrating walls of soft cavities. The pictures were made from histological sections by assembling camera lucida drawings of adjacent portions of sections to build up the cavity wall. The slides showed respiratory bronchioles, capillaries, small extravasations of blood, caseous nodules, and strands of elastic tissue in the wall, but practically no connective tissue. *A control illustration* was also shown, illustrating the thick connective tissue wall of an old cavity.

A discussion followed. Dr. A. NIVEN ROBERTSON (Chesterfield), who showed several slides of annular shadows to illustrate his points, said that he could not believe that all annular shadows were cavities. He thought that X rays had made the diagnosis of cavities more difficult. If it was true that annular shadows were soft cavities and yet gave no physical signs, why should fibrotic walls produce physical signs ?—Dr. R. A. **Young** said he also had not been convinced, by the arguments and photographs shown, that annular shadows always represented cavities ; he still had an open mind on the subject. Mr. H. P. **Nelson** thought that stereoscopic films would always show whether or not a true cavity was present.—Dr. R. R. **Trail** (Midhurst) supported Dr. Young, saying that annular shadows often came and went without any physical signs or symptoms, and that after artificial pneumothorax any cavity would be shown up in greater detail than before.

TREATMENT

Dr. W. C. **Fowler** (Pinewood) based his conclusions upon some 1500 tuberculous cavity cases amongst over 4000 young adult patients. In the *acute cavity*, usually associated with pyrexia and severe toxæmia, an immediate attempt should be made to produce an artificial pneumothorax, without which the chance of recovery was less than 1 in 10. With an A.P. recovery occurred in 1 in 3 cases in the speaker's experience—recovery here meaning good health for five years. Although the immediate result of A.P. might be admirable and often dramatic, there was always a danger of a flare-up in the other lung, and a course of Sanocrysin with complete bed-rest, concurrently with the A.P., appeared to give the best results. A phrenic evulsion was often desirable before allowing the patient to give up refills. The *fibrocaseous cavity* presented a wide variation in its requirements for successful treatment, but, generally speaking, the results of sanatorium treatment of such cavities without intervention were not good, no less than 60 to 80 per cent. of the patients being dead at the end of five years whenever the cavity was of any appreciable size. In the rare cases in which the cavity occurred at the extreme apex, the lower lobe not being involved, the cavity could generally be left alone. For fibrocaseous cavities just below the clavicle, the speaker's practice was to give six weeks' sanatorium treatment in bed, with careful sputum and temperature charts, after which if there was no appreciable diminution in sputum or improvement in temperature or blood sedimentation-rate, the right course was to attempt some form of collapse. If adhesions were holding up a cavity at the end of six to eight weeks, thoracoscopy should be resorted to, by which means the really hopeless cases could be quickly ascertained and other measures, such as partial or complete thoracoplasty or an apicolysis, adopted without loss of valuable time. An uncollapsed thin-walled cavity which was suspended by one or more adhesions was a very dangerous condition, and if the adhesions could not be quickly and completely divided, the A.P. ought not to be left to drift on. If the cavity was in the upper half of the lung and the lower half was reasonably free from disease, the best course was to allow the A.P. to become absorbed and to do an upper thoracoplasty, preferably without a phrenic evulsion. If the lower half of the lung was definitely involved, it was better to keep the A.P. going and continue refills after an upper thoracoplasty. In the case of *fibroid cavities* with really thick walls, collapse by A.P. was difficult, if not impossible, even if no adhesions were present. When such cavities gave rise to no symptoms they could usually be safely left alone. When interference was necessary, apicolysis or thoracoplasty was needed ; an inadequate thoracoplasty might however be worse than none at all. The value of phrenic evulsion lay, he thought, in its effect upon the surrounding lung tissue rather than on the cavity itself, except in the case of very recent soft-walled cavities in the base. He had been impressed with its value after the collapse of a cavity by A.P., before the lung was allowed to re-expand. He doubted, however, whether a cavity was ever really obliterated.

Dr. **James Watt** (King George V.) said he had examined the records of 899 consecutive cases treated without collapse therapy during 1926 and part of 1927 in the King George V. Sanatorium. In 109 of these there was evidence of cavitation detected on ordinary physical examination. Excluding cases who could not be traced at the end of five years, of the cavity cases 82 per cent. were dead, 11 per cent. alive and fit for work, and 7 per cent. alive but unfit for work, the corresponding figures for the non-cavity cases being 49, 38, and 13 per cent., respectively. Serial radiograms in 50 of the cavity cases were studied to estimate the effect of sanatorium treatment without collapse therapy on the size of the cavities, where a reasonable period of time elapsed, ranging from 7 to 50 weeks and averaging 20 weeks, between the taking of the first and last films. In 50 per cent. the cavities were unchanged in size, in 34 per cent. they increased, in 10 per cent. they grew smaller, and in 6 per cent. they varied in size. These figures were disconcerting to the view formerly held that cavities would frequently shrink during sanatorium treatment. Although such treatment without collapse therapy did effect an improvement in the general condition of patients with pulmonary cavities, it had little effect in obliterating definite pulmonary cavities 1 cm. or more in diameter. The ultimate prognosis in such cases was definitely bad.

PROGNOSIS

Dr. L. S. T. **Burrell** (Brompton) said that treatment depended entirely upon the type of cavity present, which might be : (1) the recent cavity without a wall of fibrous tissue ; (2) the cavity containing pus and lined with a fibrotic wall ; (3) the dry cavity lined with a fibrotic wall ; (4) the cavity diagnosed by X ray alone, with no other signs or symptoms. In the case of (1) the speaker thought it absolutely essential to collapse the cavity by artificial pneumothorax, since otherwise the disease would spread rapidly, the other lung soon becoming affected and the patient usually dying within a year or eighteen months. Phrenic evulsion was useless and often actually harmful, and thoracoplasty was definitely contra-indicated. In some of these acute cases the disease might progress without cavity formation, yet artificial pneumothorax was just as urgently needed. In type (2), which was by no means uncommon, treatment should be directed to closing the cavity, if possible by artificial pneumothorax, for an enormous majority of patients with such a cavity did not long survive ; they were exposed to many dangers, such as secondary infection, hæmoptysis, and recurrent temperatures, and their general health was usually much impaired. If artificial pneumothorax failed to close the cavity, by reason of adhesions or otherwise, some other method must be found, such as thoracoplasty or apicolysis. Phrenic evulsion alone was, in the speaker's experience, disappointing. In type (3) the possibilities of danger from the cavity should be weighed against those from attempts to collapse it. Symptoms due to the cavity, such as recurrent hæmoptysis or pyrexia, might justify even drastic treatment, but it was important to distinguish between symptoms due to the cavity and those that were not. The more fibrosis, the less likely was artificial pneumothorax to be successful, and apicolysis or thoracoplasty was usually needed to collapse the cavity. But except in the presence of definite indications for interference, a chronic fibroid case was often best left alone. Finally, the cavity only revealed by X rays should not be taken as an indication for collapsing the lung.

Dr. B. R. Clarke (Belfast) thought there was abundant evidence that the natural healing of cavities was much commoner in the early forms. Annular shadows, especially when unaccompanied by definite physical signs of a cavity, often disappeared with prolonged rest. With thick-walled cavities the degree and probability of healing were in proportion to the power of the lung to contract. Flattening of the chest wall and displacement of the mediastinum formed part of the healing process, which was necessarily slow. The size of a cavity had some bearing on prognosis; some authors described as cavities small ill-defined areas of rarefaction half an inch in diameter. All the radiological cavities dealt with in his own figures were more than this in diameter and the majority more than one inch. He thought it questionable whether hæmoptysis was especially associated with cavity formation. Jacquerod held the contrary, and had quoted impressive figures in support. The clinical histories of patients in the Forster Green Hospital amply bore out this view, although the difference was somewhat less marked than in Jacquerod's figures. Aspiration of infected matter was a very real danger, the contents of a cavity passing into previously unaffected areas of the same lung and of the other lung. Certain of the extra-pulmonary complications of phthisis were also common in cavity cases—e.g., tuberculosis of the larynx. The influence of pleural adhesions on cavity formation had been studied by the Matsons, who found that satisfactory collapse of the lung by A.P. was prevented by adhesions in 60 per cent. of cavity cases as compared with 49 per cent. in fibrocaseous cases without cavity. The mortality from pulmonary tuberculosis in patients with positive sputum was very high where conservative treatment only had been adopted; it might be doubted whether a cavity could make the prognosis much worse. There was, however, direct evidence that the immediate mortality was greater in patients with a cavity.

Dr. G. E. Soltau (East Anglia) said that in no other disease were there so many pleasurable surprises and so many disappointments over relapse. The unknown factor was the fibrosing faculty of the individual. Cavity formation in the lung was a result of the infection, and the three forms of cavities described were really the result of the patient's reaction to the disease. In the intensely acute case with rapid cavity formation with a necrotic wall, the patient's reaction was practically nil—there was no fibrosing faculty from the outset—and the prognosis in these cases was grave as regarded arrest or cure. It was, she felt, a mistake to treat the cavities as such at that stage, especially when there was marked toxæmia. The patients should first have a period of absolute rest, for though dramatic results might be obtained for a short period by collapsing the lung, the improvement would not be lasting, and there was a risk of extension to the pleura with empyema or a visceral lesion. If rest definitely improved the condition, the cavities might be treated, although without much hope. In a fibrous-walled cavity compression of the lung obliterated the lumen and prevented secretion from collecting. Here again the fibrosing faculty of the individual was the determining factor. The healing of cavities even when compressed was often very slow. Until some method could be found of stimulating fibrosis, cavity formation of either type must have a doubtful outlook. With the dry fibrotic cavity, there was no occasion for any local treatment.

THE MEDICO-LEGAL SOCIETY

At a meeting of this society held on Oct. 26th, Sir Bernard Spilsbury, the new president, gave an address on

Some Medico-Legal Aspects of Shock

He had selected this subject, he said, because shock might occur in forms which present to the medical man most difficult problems for elucidation. In such forms the sudden death offered little opportunity of observing the bodily changes which had taken place, or of ascertaining the mechanism by which death was brought about. "Shock" he regarded as one of the most overworked terms in the medico-legal vocabulary, as many deaths said to be due to shock should really be ascribed to such conditions as loss of blood, exhaustion, injury to a vital organ, or concussion of the brain, and so forth. Cases in which persons could justly be said to owe their death to shock were comparatively rare. It was an elusive term to define. Shock might develop gradually, appearing some hours after the injury which caused it; its most striking manifestation was a progressive fall of blood pressure to a level far lower than was found in health, and this might continue to a fatal issue. But the fall might be arrested and recovery ensue. Of this variety of delayed shock many examples were encountered in the war, and some of the deaths following street accidents came into the same category. Deaths due to flagellation might be similarly classified. He referred to this form of shock to point out the mechanism by which it developed, as the investigation of war injuries had shown that the progressive fall of blood pressure was due to changes occurring mainly in the capillary circulation, those tiny vessels becoming greatly dilated, and so accommodating far more blood than usual; and in addition, as a result of changes in their walls, some of the fluid of the blood passed into the tissues and so the total volume in the vessels was materially reduced. Experimental work had demonstrated that the explanation of these changes was that the crushed and injured tissues gradually developed certain chemical bodies known as histamines, which, by their action on the capillaries, produced these changes.

On the other hand, shock sometimes appeared immediately after the application of a stimulus, and death might ensue in two or three minutes. In those cases opportunity was seldom given to note the bodily changes, and these forms of shock could not be reproduced experimentally in animals. Hence it was not surprising that there should be a disparity of views as to cause of death. By some it was ascribed, without qualification, to "syncope"—whatever that might mean—while others said death was due to a sudden inhibition of vital activities in the nervous system; by others abnormal reflexes were invoked. The study of this subject had received an immense impetus from the publications of the eminent French medical jurist Brouardel. Some critics expressed the opinion that such cases as Brouardel described were explained by the Gallic temperament, a view Sir Bernard did not support.

In a very important form of shock, that due to electrocution, the effects of an electrical discharge through the body had been established by experimental methods and he did not propose to consider that form.

SHOCK CAUSED BY ABORTION

A form of shock of very great importance was that due to attempts to bring about criminal abortion. Cases such as these were apparently unknown in this country until about twenty years ago, but since then their numbers had shown a steady increase. In the last 19 years he had himself investigated 19 fatalities which were ascribed to such attempts; and there was one other case in which the facts were not investigated by him, but were submitted to him for the purpose of giving evidence when a man was charged with having caused death. In 12 of the 19 cases the death followed operation by the woman on herself; in 6 the operation was done by another person, and in 5 of these the operators were convicted for procuring abortion; whilst in the other case the man, who almost certainly had brought about abortion, could only be convicted of supplying a noxious substance. One case was a doubtful one, there being grave suspicion that abortion was performed by another person. Of the 19 cases, 13 were due to the injection of fluid into the uterus; the remainder, with one exception, were caused by the passage or attempted passage of an instrument through the cervical canal. The exception he would refer to presently.

Sir Bernard described in some detail three representative cases, from which he had learned more concerning the mechanism of the death than from any of the others. The first of the three was clearly a self-induced operation. It was a death from shock due to injection of soap solution by a Higginson's syringe into the uterus.

Immediately on being called in, the police took photographs of the dead woman and the surroundings, and an enlargement of one of these was passed round. It showed the apparatus which had been used lying near the girl who was on a bed, with her clothing raised. The girl was 18 years of age and engaged to be married. On the night of her death she was alone in the house from 6.50 onwards. Nothing was known of what happened until 8.30 when, according to his custom, her young man called; he found the lights and the wireless on, and after waiting a little called her name with no response. On entering her room he gave the alarm to a neighbour, and a doctor was sent for, who, on arrival, pronounced life extinct. Sir Bernard Spilsbury deduced from the position and condition of the utensils that probably the first attempt at injection into the uterus failed, a subsequent attempt being successful. She had just time to raise herself when shock developed and she fell back on the bed, and in this posture was found. This assumption as to what had happened was confirmed post mortem. She was four to five months pregnant, and the neck of the uterus was slightly dilated, the plug of mucus in the cervix was displaced and was blood-stained, and on opening the body of the uterus it was found to have an intact ovum, the membranes being unruptured. The membranes, however, had been stripped from the lower part of the uterus for 2½ to 3 inches; in the space there was blood-stained fluid; the stripping had occurred shortly before she died, as a result of the injection of the fluid. The examination also showed that she was perfectly healthy. But there were other changes present which were of importance. When the body was first seen there was a very marked livid colour on part of the exposed skin surface, especially on the face, neck, shoulders, and upper part of the chest. By the time the autopsy was made, the intensity of the colour had abated. The transitory character of this lividity was important to remember. The organs, especially the abdominal ones, were much congested, with the exception of the heart, which was pale, and the brain. There was no injury of the genital tract.

In the second case the attempt was made by another person. This victim was a young unmarried woman 18 years of age, who became pregnant and who learned that in her village was a Frenchman who would operate upon her and who was subsequently convicted of having caused her death. She and her lover visited the Frenchman's house. She related afterwards that he had syringed her, but caused her no pain or ill-effects. He told her he had inserted a rubber tube, which, he said, would have to be removed next day, and made an appointment in the open air for the purpose. When they met the young man was required to stay some distance away and to rejoin the other two in five minutes' time. Before the five minutes had expired the abortionist shouted that the girl had fainted. The young man found the girl unconscious, and she took her last breath as he reached her. He afterwards stated that as soon as he saw her he was struck by the deep blue colour of her skin, as if she were blue with cold, though it was warm weather. The Frenchman left them, ostensibly to fetch a doctor, but did not do so, and afterwards denied all knowledge of the girl. This girl, like the last, was quite healthy, except that she showed some signs of what was sometimes described as status lymphaticus, and therefore Sir Bernard held that this might have been a factor in causing her death. But it was not an essential factor, and was not present in any of the other cases. This girl was five months' pregnant, and he found the neck of the uterus dilated uniformly to about the size required to admit a No. 9 or No. 10 catheter. When the body of the uterus was opened the ovum was found to be intact, but the membranes were separated from the wall round the internal os for a short distance, the space being occupied by a flat blood clot the diameter of a shilling, showing that something had filled the dilated cervix and had prevented the escape of blood. It was never discovered what object was used for the purpose. There had been no pain when the object was inserted and its removal could scarcely have been painful; hence pain was not the cause of the shock. An important point was that the girl was still breathing when her young man first reached her; thus her respiration continued for some time, probably about half a minute, after shock set in.

In the third case the heart continued to beat for some time after the woman became unconscious from shock. The victim was a married woman, aged 26, who died suddenly in the bedroom of a friend's house. The case was reported to the coroner, and appeared to be a sudden death from natural causes. The woman was said to have gone to the friend's house to borrow some vinegar for her husband's supper; she went upstairs to her friend who was making the bed, when she suddenly said "Oh, my heart!" changed colour, and collapsed on the floor and died at once. At the autopsy Sir Bernard found some surface lividity. She was about three months pregnant. Search of the body failed to reveal any disease which could have caused death; all the organs of the body were very congested, and the uterus was very livid. There had been no disturbance inside the uterus; the external os just admitted the little finger; there was no injury and no sign of any injection. Sir Bernard reported to the coroner, Mr. Ingleby Oddie, that the death was due to shock during an attempt to procure abortion. An inquest was held, and the witnesses adhered to their story, the coroner giving a verdict of death from shock, and observing that the police would no doubt continue their inquiries. That evening the friend in whose house the death occurred and her husband went to the police and admitted that their evidence was false and that the death was due to an attempt to procure abortion by another woman who had come to the house by appointment. This woman had previously operated successfully upon the friend, who had miscarried as the result, and at the present time the woman was treating her for another pregnancy. The deceased woman had been operated upon by the abortionist about a fortnight before her death but without effect; she was therefore familiar with the treatment. On the second occasion she was laughing and joking as she prepared for the operation. The abortionist filled a Higginson's syringe with warm water, introduced the nozzle and after adjusting it, squeezed the bulb. Immediately the woman gave a gasp, changed colour, and lost consciousness. The abortionist fetched cold water and sprinkled it on her face. The friend's husband was then called upstairs; he helped to lift her on the bed; he stated that he could feel the heart beating. But she showed no other sign of life and was pronounced to be dead by the doctor who came a few minutes later. The abortionist, the friend and the dead woman's husband were charged as principal and accessories with causing her death, and they all pleaded guilty to the charges.

In summarising his experience of abortion cases Sir Bernard pointed out that in every one of the 18 cases the victim was young and healthy (with the exception of status lymphaticus in one case); in every case the onset was immediate and death rapid; in every case the exciting cause was some interference with the uterus, and pain did not appear to be an essential factor, as it was probably absent in the last two cases described. There was a tendency towards lividity of those parts of the surface which were not pressed upon by clothing, most marked immediately after death, fading and in some cases absent when the post-mortem examination was made. In every case there was marked congestion of most of the organs, especially those of the abdomen and pelvis, for which there was no obvious explanation; the fœtus in every case was very livid. Histamine poisoning could not be the explanation of these deaths, the immediate reaction and the absence of injury ruling out that mechanism. The constant post-mortem appearances indicated that the mode of death was the same in all the cases. As the heart was known to have continued to beat for some time in one of the cases seen before death, and the respiration was known to have continued in the other, inhibition implying an instant arrest of all the vital functions could not be the explanation. In his opinion the deaths must be ascribed to a nervous reaction of the nature of a reflex. The changes observed at the time of death and the post-mortem appearances were explained if, as the result of impulses passing from the uterus to the nervous system, a paralysis of the vasomotor junction brought about a dilatation of the arterioles throughout the body. This would lead to a rapid fall of arterial pressure, resulting quickly in loss of consciousness, the heart continuing to pump blood until it failed from slowing of the circulation and the respiration ceasing from the same cause, a much larger proportion than usual of the blood being accommodated in the dilated capillaries. This seemed to Sir Bernard the only satisfactory explanation of these deaths, but it offered little hope of treating successfully this form of shock, even if skilled attention was available immediately.

This form of shock was not, however, always fatal. Abortionists after conviction had admitted that their patients were sometimes taken ill at the time of the operation, even to the extent of fainting, and often had to rest for a time after an operation. Anæsthetists also had similar experiences, patients having uterine operations manifesting alarming symptoms occasionally when the cervix was being dilated under an anæsthetic.

SHOCK FROM LARYNGEAL STIMULATION, IMMERSION, AND BLOWS

Another form of fatal shock was due to the entrance into the larynx of a foreign body. Sir Bernard referred to two cases, in one of which a child 3 years of age, at tea with her parents, suddenly made a choking noise, coughed, fell off her chair unconscious, and apparently died at once. At autopsy nothing was found to account for her death, and the foreign body, if there was one, had been expelled. In the other case an infant of 8 months was found dead as the result of a feather entering the larynx. The sudden deaths described as occurring occasionally in garrotting were probably due to a similar mechanism. Another form of sudden death from shock which was fairly common was due to immersion in water. It was well known that bodies removed from the water not infrequently showed no signs of death from drowning and no other unnatural or natural condition which would account for death. These cases were described as deaths from the shock of immersion in water, and Sir Bernard described a typical case in which instantaneous rigor mortis also occurred; he pointed out that respiration must be arrested instantly otherwise some indications of drowning would be found. He suggested that these deaths were due to the sudden rush of water up the nose and said that he knew of no case where the victim had dived into the water. He also quoted the experience of the pearl-divers of the Persian Gulf who to this day wear no diving dress but take the precaution of placing a clip upon the nostrils before they are lowered into the sea. In these cases and in those of laryngeal stimulation there was an absence of the surface lividity and of the congestion of the organs seen in the abortion cases, and the mechanism of shock in these cases, whilst clearly nervous in character, differed from the abortions in not being associated with vasomotor paralysis but with instant paralysis of the respiratory centres; and he considered it probable that these deaths were due to some abnormality in the reflexes by which coughing and sneezing were produced by stimulation of the laryngeal and nasal mucous membranes.

Lastly he referred to the form of sudden death which occasionally followed a blow in the upper part of the abdomen, and described a recent case in a boy who was sparring with another, in the course of which he received such a blow, which caused him to collapse, lose consciousness, and die almost immediately. In this and in other cases of the kind there was found usually marked engorgement of the abdominal viscera and there might be some surface lividity, and he considered that these deaths were probably due to the effect of the blow upon the abdominal sympathetic system producing dilatation of the arterioles similar to that in the abortion cases but limited to the abdominal region.

Thus in the types of shock which he had described in which death followed almost immediately upon the stimulus, the effects were in his opinion to be attributed to a nervous reaction which depended for its form upon the site of stimulation, so that stimulation of the cervix differed in its effects from that of the larynx, these differences probably depending upon the nature of the reflexes which were normal to the particular regions.

NORTH STAFFORDSHIRE HOSPITALS.—Sir Holburt Waring, P.R.C.S., recently opened a private patients' department, which has cost £17,000, at the North Staffordshire Royal Infirmary, Stoke-on-Trent. There are 13 beds for men and 20 for women, arranged as private single and double rooms and cubicles. The cubicle wards are subdivided by glazed metal screens and curtains into two- and four-bed compartments. A room has been provided for the reception of flowers.—Although the new hospital pavilion, nurses' home, and other works at the London-road public assistance institution, Stoke-on-Trent, which cost £122,000 were formally inaugurated in November last by Lord Dawson, the pavilion has not yet been furnished or used, pending the erection of an administration block. The pavilion has room for 162 beds, and provision has been made for extension up to 819 beds.

REVIEWS AND NOTICES OF BOOKS

An Outline of Immunity

By W. W. C. TOPLEY, M.D., F.R.C.P., F.R.S., Professor of Bacteriology and Immunology in the University of London. London: Edward Arnold and Co. 1933. Pp. 415. 18*s*.

THERE are few books in existence which set out to tell the facts of immunity systematically and impartially. We know of none so complete, so up to date, and at the same time so readable as this one. Prof. Topley thus defines his subject:

> "Immunity is a vigorous infant among the sciences, just rising 50 years. Like most young and vigorous things it is a little uncertain in its movements, a little confused in its mind, and more than a little incoherent in its speech. The growth of the past ten years has changed its outlook widely; and that growth cannot be neglected. It might be urged that a knowledge of established facts and reasonably stable theories is all, if not more than all, that can be expected from those for whom immunity is only one of many methods of approach to the problems of practical medicine. But the case is not so easily met. Ignorance of the present working hypotheses of immunity means inability to form a sound judgment on many severely practical problems. Immunological findings travel quickly, sometimes too quickly, from the laboratory to the ward and to the field. From the moment he is qualified the student will have to act on his own views with regard to the efficacy of this or that immunological procedure. It is bad for him, and very bad for medical science, that his views should be uncritical and ill-informed. And so, with no escape from controversial matters, the didactic method becomes impossible. All that can be done is to give personal conclusions and the evidence on which they are based. Every medical man must learn the art of drawing the best conclusions he can from data that are often incomplete and sometimes highly confusing. He will find immunity an excellent training ground."

This introduction shows the aspect from which the subject is approached, and it is necessary to add only that the author never shifts from this well-defined position and that his picture is always in focus. Prof. Topley has written a systematic treatise in which the various threads which hold the science together are carefully woven into one ingenious pattern. In respect of unity of plan the arrangement is a considerable improvement on that adopted in Topley and Wilson's "Principles of Bacteriology and Immunity," the first part of which covers a good deal of the same ground. Several of the chapters, such as those on the response of bacteria to the defence mechanisms of the host and that on the origin of natural antibodies, give the clearest account of these fundamental subjects we have yet seen. The fascinating modern developments in the chemistry of antigens are very well summarised. The chapter on the antigenic analysis of bacteria which has been worked out during recent years, particularly with reference to the salmonellas, is a tour de force in the exposition of a subject which often confuses even the professional bacteriologist.

Though the book as a whole is perhaps more suited to the advanced than to the elementary student, it may well exert a powerful educative influence on the more intelligent medical undergraduate. The advanced reader will find in it the best available account of immunity as a whole. As a work of reference it not only describes facts and theories without confusing detail, but provides a critical estimate of their importance. The book is a credit to the author himself and to British medical scholarship.

Evolution and Redemption

By H. P. NEWSHOLME, M.D., F.R.C.P., M.O.H. to the City of Birmingham. London: Williams and Norgate, Ltd. 1933. Pp. 267. 8*s*. 6*d*.

Dr. Newsholme is concerned to convince his readers that the good practitioner of the art and science of preventive medicine must take count of his subjects' spiritual nature as well as of their bodies, and should recognise that the purpose of man's physical existence is to express his underlying soul and spirit. It is a proposition with which few will disagree. But we could wish that Dr. Newsholme, before going to publication, had waited awhile till his exposition could have been clarified and shortened.

Arterio-sclerosis, a Survey of the Problem

A Publication of the Josiah Macy Jr. Foundation. Edited by EDMUND V. COWDRY. London: Macmillan and Co., Ltd. 1933. Pp. 617. 25*s*.

THE methods of investigation of which this book is the outcome have previously been used with success in the study of acute disease. They have now been adapted to the study of a chronic disease, arterio-sclerosis, which has never yet been tackled systematically. An understanding of the methods is essential if a clearer grasp of degenerative disorders and of the process of ageing is to be obtained; but great difficulties present themselves when research on an inaccessible part of the human body is attempted. In view of these difficulties, and of the importance of this condition, the Josiah Macy Jun. Foundation undertook to prepare a survey, the object of which would be to give authoritative information on all the different aspects of arterio-sclerosis.

So 23 investigators of various nationalities, including many well-known names, were invited to contribute articles on different aspects of the problem. Three objects were kept clearly in mind: (1) to determine the data concerning arterio-sclerosis which could be established and their relation one to another; (2) to discuss and to formulate definitely the principal problems awaiting solution; (3) to suggest the best means of attacking them. Each author has expressed his own views freely and we have here candid opinions and some ruthless destruction of cherished theories. While many sections necessarily consist of the statement and elaboration of well-founded facts, the accounts of recent experimental work show that here something definite has evolved. By means of feeding with cholesterin changes have been produced in certain species of animals which are regarded as equivalent to those typical of human arterio-sclerosis. D. A. Policard again describes an ingenious technique for micro-incineration by means of which it is possible to determine accurately the very earliest changes in mineral constituents in beginning arterio-sclerosis; this holds out promise of progress on definite lines. Since the final object of these investigations is knowledge on which we shall base a sound method of treatment or better still prophylaxis, we would like to think that Dr. John Wyckoff's section is unnecessarily defeatist in its tone, but we are reluctantly forced to admit the truth of his remark that "at present no evidence exists that there is any specific mode of therapy which can either cure or affect the progress of arterio-sclerosis."

After the expression of many expert opinions on different aspects of the subject, the impartial summary provided by Dr. A. E. Cohn at the end of the book is helpful. He welds together the various views, balances one against the other, bringing out the important points in each and showing the paths along which future research is likely to be profitable. The book is undoubtedly a work of real significance. It places on record such knowledge as seems to be established on full foundation and has cleared the ground of much that has not stood the test of time and experience. The volume is handsomely produced and well illustrated.

The Anti-Slum Campaign

By Sir E. D. Simon, M.A., M.I.C.E., Lord Mayor of Manchester, 1921–22. London: Longmans, Green and Co. 1933. Pp. 206. 2*s.* 6*d.*

The main object of this book, as stated by the author, is to show that the Government's housing policy is wrong—wrong in its assumption about the nature of the housing problem, wrong in its action to stop the building of houses by local authorities, wrong in its proposals for pushing ahead vigorously with slum clearance now. The indictment is a formidable one, and it is sustained by moderately stated argument which will carry a large measure of conviction. The gravamen of the charge against Sir Hilton Young is that at the very moment when it became possible to bring Wheatley houses within reach of the lower paid working classes for whom they were intended, but for whom they had never been available, he cancelled the Wheatley subsidy, and fell back once more on private enterprise, which can never in fact supply the need. And further, that the whole conception of large-scale slum clearance at this stage on a comprehensive five-year programme is a faulty one, because the prime need of the present situation is more and yet more new building of houses to let at low rents whereby overcrowding may be relieved. Sir Ernest Simon holds that slum clearance now is to put the cart before the horse, and he makes a very strong case for the reverse order of operations —viz., new building until the worst of the congestion is relieved and then slum clearance. In other words the quantity stage of the problem must be dealt with first, the quality stage second.

Part I. of the book consists of an impartially written history of housing legislation since the war, and Part II. deals with the present-day problem. There are four useful appendices, two of which—dealing with the effect of subsidies on building prices, and with differential renting—are of special interest.

The book is the best analysis of the housing problem which has appeared, and is admirable alike in its treatment of past history and in its constructive proposals for the future.

History of the University of Edinburgh, 1883-1933

Edited on behalf of the History Committee by A. Logan Turner, M.D., LL.D., F.R.C.S. Edin. Edinburgh: Oliver and Boyd, Ltd. Pp. 452. 10*s.*

This history of the University of Edinburgh, as is indicated on the title page, concerns itself only with the occurrences of the 50 years that have elapsed since the tercentenary celebration, which fell in 1883. Developments in all the faculties of the University are considered with some detail, and the volume ends with chapters recounting the additions made to the University library and portrait gallery and the recent improvements in the social life of the student.

In each of the two faculties which directly concern our readers, that of medicine and that of science, a fine story of progress can be shown. In medicine the growth of activity that has taken place in the last 50 years is indicated by the fact that during this period a staff of 12 professors and 2 lecturers has had to be increased to 19 professors and 48 lecturers, with a corresponding augmentation in the number of assistants. Some of these new appointments were not immediately erected into full professorships but were held as lectureships. Here an interesting commentary on the difference between the position of the professor as an academic representative of his subject in a university and the lecturer as the instructor of students is implied in the statement that before 1890 medical instruction in the University was largely or even mainly made by readers in the subjects, few professorial classes except those in anatomy being compulsory. Many students were thus instructed by extra academical lecturers but to-day the number of extra academical teachers has dwindled to vanishing point, while a variety of text-books has removed the necessity of formal lectures, the call for practical instruction being proportionately recognised. A list is given of the occupants of the chairs included under the faculty of medicine, and everywhere we are reminded alike of the past glory and the present efficiency of their holders. A further interesting category is supplied of those who, having acted as assistants to the professors or lecturers in the University of Edinburgh, have gone elsewhere to make names for themselves and assist in the progress of medicine.

The faculty of science is dealt with on the same plan and again many of those who have occupied chairs in the various subjects will be recognised as having contributed to the scientific progress of the world. Although Edinburgh has produced from very early times distinguished workers on scientific lines, the University was slow in giving official recognition to branches of science other than those which grew out of mathematics or which were accessory to the teaching of medicine. In fact it was during the recent 50 years that chemistry was transferred to the faculty of science from that of medicine, where its place was taken by a new chair of chemistry in relation to medicine. But the list of famous men connected with the faculty of science is striking, although a separate faculty was not established till 1893 and although it was only after the middle of the nineteenth century that science became seriously represented in the University.

Women students have been admitted to the University of Edinburgh since 1869, but medical students were excluded from the classes in the Edinburgh Royal Infirmary until after the Royal Colleges had resolved to admit them to their examinations. Clinical teaching was provided in the Leith Hospital until in 1892 they were admitted to the Royal Infirmary, by which date the Universities of Scotland Act had placed women on the same footing with men as regards the degrees in medicine; the University of Edinburgh announced its determination to admit women to graduation in the faculty in 1894.

The book is beautifully produced and embellished with portraits of some of the distinguished men whose life and work are categorised and with views of some of the buildings in which their work was done in connexion with the University. One of the most striking illustrations is a reproduction of William Nicholson's portrait of the late Prof. Saintsbury, professor of rhetoric and English literature for 20 years preceding the war.

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THE LANCET

LONDON: SATURDAY, NOVEMBER 4, 1933

THE STUDY OF IMMUNITY

THE science of immunology—let us call it by the name which, whether we like it or not, seems to have come to stay—was born amid general rejoicing in the brilliant epoch of bacteriology with which we associate the genius of Pasteur, Koch, and Metchnikoff. Chemistry, medicine, and biology might thus equally claim the honour of parenthood, but whichever the parent, all the sciences brought precious gifts to the cradle of the infant science. From its birth promising, it was asked to run before it could walk, and the results were in some respects disastrous. It was denied the tranquillity which best suits the healthy growth of young things. Its character suffered through the demand for premature public performances; the performances themselves sometimes proved disappointing and were often rightly howled down. Too many facts were explored without any serious attempt at method, and too many quests were feverishly followed because they might lead to some humane application. The workers in immunology were subjected to incessant demands for facts and principles to serve practical ends, and it is not astonishing that the "facts" extracted from them should often have been inadequately checked and the principles only partially evolved. In any case when these principles were developed in connexion with clinical medicine their dependence on controlled experiment tended to become more and more remote, and immunology often unsuspectingly received them back in an unrecognisable state.

A young science which undertakes to deal with the *ought* before the *is*, naturally tends to get into trouble. But while admittedly immunology became the happy hunting ground of amateur enthusiasts, humbugs, and even rogues, it has had its unquestioned triumphs both in theory and practice. It has provided medicine with a battery of new arms for attacking important practical and theoretical problems; it has displayed to the chemist a technique for analysis delicate beyond his dreams. It has shed some light, if even a dim one, on the fundamental riddles of biology—specificity, individuality, fertilisation, inheritance, blood relationship, even on the nature of living matter itself. It has taught the father ways of knowing his own son, the jurist new methods of unmasking the criminal. No one could say that such a science is wanting in scope or versatility; but that it still lacks precision its exponents could hardly deny. We have the more reason to be grateful to Prof. W. W. C. Topley for a work, reviewed on another page, which gives a masterly survey of present knowledge and of the developments that may be anticipated in this fascinating branch of modern medicine. To Topley immunity is essentially an applied science; but at the root it is as little or as much "applied" as any other physical or biological science. The facts and principles on which methods of preventing and curing disease can be based are, of course, of the utmost importance to medicine, but the corpus of knowledge of immunity has in addition a wide claim to intellectual interest. Owing perhaps to the unsystematic way in which it has been developed, the physicist, the chemist, and the biologist know little of immunity; yet if the science, even in its infancy, had been properly presented to them they would surely have found much therein to interest and inform them. That immunology has exercised a great influence, sometimes beneficent, sometimes sinister, on practical medicine, and yet has failed in the main to get the ear of general science is largely due to the lack of books which give the gist of its progress in non-technical language. Some 12 years ago a great biologist and immunologist, Jules Bordet, brought out his "Traité d'Immunité." Written in a large and leisurely style, the work summarised and coördinated many aspects of the subject which had general biological interest, and it remains one of the most thoughtful treatises on the subject so far produced. But it proved caviare to the general; the biologist found it too technical to assimilate and the immunologist for the most part was too little interested in general biology to appreciate it. H. Zinsser[1] has done good service in digesting immunological knowledge under a limited number of main headings, but he hardly attempts to make a science of the subject as a whole. A real educational advance was made by H. G. Wells.[2] Here at last was a book which the general scientific reader could follow with understanding and interest; only one thread of the subject—the chemical one—was consistently followed, but it was the one which perhaps gave most strength to the fabric. Topley in his new work makes a further attempt at coördination, and one that commands our admiration. Though he dwells chiefly on the medical and hygienic applications of the science, he is not indifferent to the larger chemical and biological issues which make immunology worth studying for its own sake. His work should dissipate the widespread idea that immunology not only is but must continue to be an inexact science. Readers far beyond the frontiers of medicine will learn something of its discipline from his work; and to doctors it will show how much the proper study of immunological data may contribute to the cultivation of scientific progress in medicine.

THE ERADICATION OF BOVINE TUBERCULOSIS

IT is difficult to understand why, with our present knowledge of bacteriology and experimental epidemiology, a method of dealing with tuberculosis in cattle should be sanctioned that is based on principles which, though regarded perhaps fifty years ago as enlightened, are no longer in accord with modern conceptions. The Tuberculosis Order, 1925, rests on the assumption that it is possible to eliminate tuberculosis by the detection and subsequent slaughter of animals suffering from disease, generally of an advanced type. It disregards the fact that the diagnosis of tuberculosis in cattle can rarely be made from signs or symptoms until relatively advanced lesions are present, and that even when supplemented by a bacteriological examination it entails keeping an animal in a herd for a period of several weeks after it has become infective before it is finally condemned. Even if a special staff of trained veterinarians was employed throughout the country in sufficient numbers to examine every animal four times a year, it would be quite impossible to eliminate any considerable proportion of the animals before they had succeeded in transferring infection to those around them. The surprising fact is, not that the 1925 Order has proved ineffective, but that anyone should ever have seriously considered it capable of leading to any marked diminution in the extent of tuberculous infection among cattle. Only a small percentage of animals infected with the tubercle bacillus, as revealed by the tuberculin test, show recognisable signs of disease, and experience has proved that, if tuberculosis is to be eradicated, all infected animals must be removed from the herd. The success of the American method, depending as it does on the testing of every animal with tuberculin, the slaughter of all the reactors, and the addition of fresh animals only from tuberculosis-free herds, is well attested, and there is no doubt that in practice the scheme has worked. Its great objection is the expenditure involved in compensation of the owners. Though a few of the more educated and wealthy stock-breeders in this country have adopted some of the principles underlying the American method and have succeeded in building up tuberculosis-free herds, there are good reasons why it could not be applied simultaneously over the whole of Great Britain. The alternative is to adopt a modification of the method which allows the positive reactors to be kept on the farm, segregated from the non-infected group, until such time as they can conveniently be sold off. The real difference between the ideal method and its modification is that the former demands the immediate slaughter of the reacting animals, while the latter permits the owner not only to keep them on the same farm for some time in a potentially infective condition, but to sell them subsequently in the open market for transfer to other herds.

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[1] Resistance to Infectious Diseases. 4th ed. London. 1931.
[2] Chemical Aspects of Immunity. 2nd ed. New York. 1930.

Advocates of this modified and much less costly method have hitherto had little evidence to present in support of its value, but a recent report[1] to the Medical Research Council by Mr. LESLIE JORDAN, Ph.D., veterinary pathologist to the Hannah Dairy Research Institute, goes a long way to fill up this lacuna. The experiment that Dr. JORDAN describes was carried out during the three years 1929–1932 in an area of nine square miles in Ayrshire, and consisted in an attempt to ascertain how far it was practicable under field conditions to diminish the incidence of tuberculosis in cattle by a method involving a minimum of expense to the owner. Tuberculin testing and veterinary advice were provided free of charge, and the only direct cost to the owner consisted in minor alterations in buildings and periodic disinfection of premises. Altogether 30 milking herds were included. The average size of the farms was about 150 acres, and the average number of milking cows was 26 per herd. Ten of the herds had been tested at some time previously with tuberculin, and five of them were believed to be free from reactors. The first test, carried out on 1475 animals, revealed 26·1 per cent. of reactors. Eight of the herds were found to be free from tuberculosis, while the proportion of reactors in the remaining 22 herds varied from 1·3 to 69·5 per cent. The general procedure advocated was designed to cause a minimum disturbance in farm routine. Each herd was divided into two groups, and whenever possible the infected group was housed in separate buildings. If this was impracticable, the reactors were housed at one end of the barn and the non-reactors at the other, every care being taken to avoid the occurrence of cross-infection. Reactors were grazed in separate fields from non-reactors, common water-supplies were eliminated, and infection from manure was guarded against. Valuable reacting cows were retained until after calving, unless they had symptoms of tuberculosis, and calves from reacting dams were fed on non-reactors' milk. The clean portion of the herd was recruited from young non-infected stock mostly bred by the owners themselves. Every herd was re-tested with tuberculin at six-monthly intervals. On the whole the experiment worked well, and the proportion of reactors fell gradually. Two of the owners, however, failed to coöperate satisfactorily, so that in their herds the proportion of reactors was actually higher at the end than at the beginning of the observational period. The seventh test, made at the expiration of three years on a total of 1635 animals, revealed the presence of only 12·3 per cent. of reactors, and showed that whereas at the commencement only eight herds were free from tuberculosis, at the termination of the experiment no fewer than 20 herds fell into this category. Considering that this was in the nature of a preliminary experiment, and that during its progress a considerable amount of practical information was obtained which would be of value in the making of a fresh attempt, there is every reason to regard the results with complacency.

Discussing the general question of tuberculosis eradication, Dr. JORDAN has some hard things to say against the 1925 Order. In its twofold object of limiting the spread of disease among cattle and of reducing the infection of the milk-supply, it has proved a failure. He brings striking evidence to show how frequently tuberculous animals succeed in spreading infection before they are recognised as clinical cases and removed from the herd. Thus, examining 32 hitherto untested herds by the tuberculin reaction, he found that in 16 of them, in which there was no history of a clinical reactor, the proportion of reactors was 53·1 per cent., whereas in the remaining 16 herds, in which a clinical reactor had been removed under the Order within the past two years, the proportion was 82·3 per cent. These figures are the more significant in that they concerned herds located in a country where periodic inspections under the Milk and Dairies (Scotland) Act, 1914, were regularly made. Similarly, evidence is produced to indicate that veterinary inspection with manual palpation of the udder, even when carried out intensively, is incapable of ensuring freedom of the milk-supply from tubercle bacilli. The estimated cost of the Tuberculosis Order for Great Britain is £120,000 per annum. The estimated cost for conducting the modified eradication policy pursued by Dr. JORDAN is £1000 per annum for every 5000 head of cattle. On this basis, if the money now spent annually in administering the Order was employed for furthering a voluntary scheme of tuberculosis eradication, it would be possible to deal with 600,000 head, or about one-tenth of the cattle population of Great Britain. The scheme described in Dr. JORDAN's report is not ideal—far from it. Besides requiring a fairly high level of intelligence and conscientiousness on the part of the owner and his farm assistants, it necessitates the disposal of known reacting animals in the open market, and the consequent potential spread of infection to other herds. Since a high proportion of animals exposed for sale in public markets are already infected, the addition of a few extra reactors may be considered as of no great moment; but this holds true only during the early part of the operation of such a scheme while there are still plenty of owners willing to buy up reacting stock. If the scheme was widely adopted and made considerable progress, the problem of disposing of reacting animals, other than by slaughter, would become a very real one. This is, however, looking too far ahead. The great merit of the experiment here recorded is to show that by a voluntary process, entailing no other cost than tuberculin testing and veterinary advice on methods of isolation and rearing of young stock, it is possible to free from infection a considerable proportion of tuberculous herds within the short space of three years.

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[1] Special Report Series No. 184. 1933. H.M. Stationery Office. Pp. 104. 2s. net.

HOUSING AND MALARIA

SINCE 1931, when CLAYTON LANE's report was published by the League of Nations,[1] fresh information has accumulated; so that, although the problem of housing and malaria is now in some ways less simple, certain of his questions have been answered. This is made clear by a valuable summary of present knowledge which has been written by Sir S. RICKARD CHRISTOPHERS and Prof. A. MISSIROLI.[2] From their detailed and fully documented paper a few points may be selected for notice. The view is accepted that the house is the spot where man and mosquito are most likely to meet, the place above all others where man is most likely to be bitten by the infective anopheles. In Europe for practical purposes that insect will be *Anopheles maculipennis*; but close study of this species has led to its division into four zoological varieties. Two of these, *A. maculipennis messeæ* and *A. m. maculipennis* are widely distributed, do not feed on man when cattle are available, and in winter hibernate completely. The other two, *A. m. atroparvus*, found in Holland in brackish low-lying areas, and *A. m. labranchiæ*, reported only from central and south Italy, feed on man as well as on animals and undergo only partial hibernation. That is to say, they feed readily during winter but do not oviposit; accordingly the instinct to do so does not drive them from the house to the breeding-place every two or three days, as it does in summer. Hence they run no chance of wasting malarial sporozoits on cattle, and they can and do infect man readily both in winter and in summer. These two subspecies are found in those European areas where malaria persists, and it is not yet known whether tropical species of anopheles show a similar association between differences in anatomical structure and in habit. Moreover, when such gonotropic dissociation does not exist, the female does not limit her excursions to occasions for oviposition; indeed, it is estimated that the turnover in a given shelter may amount to three-quarters of the anopheline population nightly. An interesting point brought out in the new report concerns the mosquito's counter-move to the undesigned efforts to smoke it out which are made when cooking is done in chimneyless huts. In such places the smoke may be so dense that breathing is impossible unless the dweller squats on the floor, and in these circumstances it is only on the lower part of the walls that mosquitoes will be found. It is agreed that light and air in the house discourage the presence of a large anopheline population, but it is pointed out that these conditions do not greatly deter the entrance of mosquitoes into dwellings, especially at night.

So it is on screening that the emphasis of this paper is placed. For this to be successful, however, certain conditions must be strictly observed. The building must be suitably built, the screening must be efficiently done, and as efficiently supervised in its working, there must be regular destruction of all insects which may enter, and there must be effective propaganda, tuition, and example, with a people intelligent enough to be capable of interest in their own health. Moreover, the screened house or room may be unbearably hot and close without some form of mechanical fan. As CHRISTOPHERS and MISSIROLI note the issue of screening really lies in the sphere of human difficulties and human imperfections, and there is no present prospect of so far improving the housing of the indigenous inhabitants of many non-European countries that screening will take any effective place in preventing infection. All of which but serves to bring out the inseparable connexion between housing and malaria.

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[1] See THE LANCET, 1931, ii., 306.

[2] Quart. Bull. Health Organisation League of Nations, 1933, ii., 355.

ANNOTATIONS

THE LEEDS APPEAL

"TAKING the history of medicine in the last 160 years, there is not one single individual in the whole world who does not owe a direct obligation to the work done in Leeds General Infirmary"—thus Lord Moynihan without exaggeration at a dinner last week in Leeds at which an appeal was launched for a quarter of a million of money. So great a sum has rarely been asked for in a breath by any provincial hospital, but such are the cogency and urgency of the appeal that £76,000, nearly one-third of the amount asked for, has already been promised. The Leeds General Infirmary has never been a merely local institution, and to-day two-fifths of its patients come from outside. During the last decade the pressure upon its accommodation has greatly increased, but there has been no amelioration of the difficult conditions under which the honorary medical staff have to work. Every year some 47,000 new out-patients are dealt with; and on the average 1000 of them are examined and treated every day in space so exiguous that four patients have to be examined simultaneously in the same room. The consequent noise and confusion are distracting to the doctor and disturbing to the patient.

A remedy for this state of things is now to be sought by converting the present operating theatres into rooms for medical out-patients, with the collateral advantage of providing six new modern theatres capable of dealing with operations which have so increased that last year they exceeded 12,000. A new ward block will form a casualty department on the ground floor, while the upper floors will provide beds for from 80 to 100 paying patients. All this necessarily involves more accommodation for nurses, and £30,000 is to be spent in bringing them under one roof, while "obsolete and inefficient" kitchens are to be reformed. It is often complained that hospital enlargements mean extra annual expenditure, but the Leeds board of management are satisfied that in this case maintenance costs will be reduced, the waiting-lists of 1700 shortened, and £3000 a year saved in interest upon the overdraft of £86,000 which a successful appeal would wipe out. Moreover the pay-bed department, according to all experience, would earn a profit. Seeing how large a proportion of the proposed expenditure consists in the wiping out of a crippling debt there is clearly nothing extravagant about the scheme. Not only will these plans, when realised, enure to the interests of the suffering poor and to the sick of the middle-class to whom costly private treatment is impossible, but, what is ultimately of at least equal importance, to the interests of research and medical education. The Leeds School of Medicine, now a faculty of the University and more than a century old, grew out of the Infirmary, and the two have always been inseparably connected. They have grown together, and more than 20 years have elapsed since the union was completed when the clinical teaching at the Infirmary was placed under the control of the University. How happy has been this union students of medical science are well aware, and it is not Yorkshire alone that will benefit by the success of the present appeal.

PROBLEMS OF MYOPIA

IT was Donders who created the conception and the term emmetropia. The emmetropic eye was the ideal structure which focused parallel rays of light on the retina without the dynamic action of accommodation. Such a view of the ideal implied that the human eye was to serve essentially for effortless distant vision; near vision was an additional function which involved expenditure of energy in the process of accommodation. The implication of Donders's work passed without challenge for wellnigh half a century and it was only in 1912 that A. Steiger questioned the whole basis on which the study of refractive errors had been placed. There is no particular reason why Donders's mechanical ideal should be accepted as a desirable normal. It may be argued that under conditions of civilisation a low degree of myopia is by no means a handicap, for distant vision does not suffer greatly, whilst there is the gain that near vision is possible without the effort of accommodation. More significant than such teleological discussion is the consideration of the actual distribution of the refractive states. Writing in our own columns recently on developmental myopia Sir John Parsons remarked that practically all mammals are hypermetropic and that the frequency curve in man had apparently shifted towards the emmetropic condition. In the terminology of Donders every departure from emmetropia is a refractive error; in actual distribution the prepondering majority of people have eyes that are not emmetropic. Helmholtz, a contemporary of Donders, expressed his low opinion of the eye as an optical instrument, but it is a question whether the criteria of perfection applied by the mechanistic nineteenth century should stand for all time.

The service that Steiger rendered to the understanding of the complicated problems involved consisted in stressing the fact that like all measurable quantities, the refractive power of the eye shows variations around a mean maximum distribution. This, too, is essentially a mechanistic outlook, for it does not apply a functional standard as the centre around which variations occur. Actually, it is found that low hypermetropia is the most frequent state, and departures from this state decrease in number the greater the difference from the mean. But whilst Steiger held that refractive states would follow a binomial curve, subsequent work has shown that the actual curves have no such character. For one thing there is a marked excess of refractions approaching low hypermetropia and a less marked excess in the region of high myopia. The symmetry that Steiger postulated is non-existent; he was, it seems, wrong in his postulate for, as W. R. Dunstan has pointed out[1] symmetrical polygons are not always obtained when data of the incidence of measurable variations are plotted. Steiger's failure to explain the whole gamut of refractive conditions raises the problem of correlation. Obviously some such process must be at work if the different components of refraction produce a low hypermetropia of much greater frequency than is to be expected theoretically. To this process of correlation A. Sorsby attaches fundamental importance in the elucidation of the problem of myopia.[2] Granted a physiological myopia as part of the range of variations, the excess of myopia over its theoretical incidence has still to be explained. Furthermore, Mr. Sorsby argues that the behaviour of the myopic eye is different from that of the non-myopic eye; the fact that myopia develops after the eye has completed its normal growth also calls for a conception of myopia which regards it as different

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[1] Medical Officer, 1932, xlviii., 111.

[2] Brit. Med. Jour., Oct. 21st, p. 730 THE LANCET, Sept. 2nd, p. 542

from the other refractive states. The explanation of myopia demands an exhaustive study of the changes in the premyopic state. We want a fuller understanding of the physiology of the growing eye, of the process of correlation during the period of growth, of the presumably great change in the anterior segment of the eye which neutralises the 30–40 dioptres increase in refraction caused by elongation of eye during the process of growth, and of the value of the different components of refraction during the active phase of developing myopia.

LETTSOM

John Coakley Lettsom was born in the West Indies in 1744 and became the leading physician in London, where he died in 1815. He was a Quaker and implacably industrious—two qualities common to many great men—and as he knew everyone from the court to the gaols and had his finger in almost every available pie, an account of his life and contacts such as Mr. Abraham has written [1] makes a straggling picture in which the hero is not always very visible. And in following up, generally in great detail, a good proportion of the side tracks which Lettsom's activities brought him to, he has, we think, produced a more generally acceptable book than a compact and exclusive biography, for we learn a good deal about a number of interesting people and occasions which would never have been monographed for their own sake. Lettsom started in practice in London under favourable auspices: "many amiable females conceived it an honour to have his acquaintance," and he was the protégé and, later, the successor of Dr. John Fothergill. In the first two or three years, after he was married and set up in 1770, he published "Reflections on the General Treatment and Cure of Fevers," "The Natural History of the Tea-tree, with Observations on the . . . Effects of Tea Drinking," and "The Naturalist's and Traveller's Companion," and so he went on through life. He founded the Medical Society of London in 1773, and was elected into the Royal Society; he had much to do with starting the Royal Humane Society, in promoting Jenner's claim to have found out something useful, in prison reform, and (which Mr. Abraham thinks his most original achievement) in founding the Sea-Bathing Hospital at Margate (1791). And in telling this tale Mr. Abraham makes us acquainted with all sorts and conditions of people Lettsom met by the way, such as Dr. John Whitehead, who quarrelled with the Medical Society and survives in a picture of John Wesley's death-bed, or pretty Betty Fothergill, who was not overpleased when Lettsom married someone else, or the Americans Waterhouse and Rush. Wherever one dips there is something worth reading about, and generally some germane pictures. The book is sure to be a great success, and our only quarrel with it is that it is printed on such heavy paper that it is physically awkward to read in the desultory moments for which it is particularly suitable.

EXANTHEMA SUBITUM

Dr. Maria Abb,[2] of the Children's Clinic of Würzburg University, puts the question whether the condition known as exanthema subitum is an independent disease or not. It was first described under the name of roseola infantilis in 1913 by Zahorsky, who had seen 33 cases in infants under 2½ years of age. In 1921 Veeder and Hempelmann gave it the name of exanthema subitum, and since then numerous cases have been described in Hungary, Germany, Switzerland, and elsewhere, though not in this country. The characteristic features are cough, sneezing, conjunctivitis, glandular enlargement, a fever of three days' duration, and a maculo-papular eruption which appears as the fever is subsiding and disappears in 24 hours without leaving any desquamation or pigmentation. The blood shows a leucopenia and relative lymphocytosis. Complications do not occur, and recovery always takes place. So far no agreement has been reached about the ætiology. While most clinicians regard exanthema subitum as an independent disease, owing to the peculiar course of the fever, the eruption, and the blood picture, Ido, Willi, Friedrichson, Göttche, and Rietschel consider it to be merely a manifestation of influenza. As the result of her observations in Prof. Rietschel's clinic, Abb comes to the conclusion that exanthema subitum is not a disease sui generis, but is merely an influenzal infection in which the eruption represents an allergic reaction. The final decision, however, as she points out, must be left to bacteriologists, who have as yet paid little attention to the condition.

NATIONAL INSTITUTE FOR THE DEAF

THE ninth annual report of the executive committee of the National Institute for the Deaf must have been a satisfactory document to those who issued it, for the story is one of real progress. The report of the chairman, Lord Charnwood, shows that despite the considerable public misconception of the affliction under which deaf persons suffer, the work of the Institute has grown rapidly, while the inquiry carried out by the late Dr. Eichholz, which made its appearance as a Government report, had produced a powerful effect on the public and official mind. There are now maintained by the Institute the Richardson House at Barrowford and the Poolemead House at Tiverton-on-Avon, both for women, a hostel for working deaf boys at Highbury Quadrant, and a centre of instruction in lip reading which is in regular session at the Swedenborg Rooms, Hart-street, London. For the management of the two latter, Mr. A. J. Story, the secretary of the Institute, is responsible in addition to other duties. Further evidence of a widening of sympathy is shown by the foundation of bodies affiliated to the Institute; these are six in number, viz., the Northern, Midland, and Eastern Counties' associations, the London and Home Counties' association, and the Scottish association. The record of activity is aptly assisted by a favourable pecuniary position. The Institute is not rich—so far from this, its need for money is real; but its developments have been carried on within its resources, and the hon. treasurer, Mr. John Tennant, was able to announce the possession of a favourable balance.

BONE-GRAFTING FOR RECURRENT SHOULDER DISLOCATION

A COMMUNICATION to the French surgical congress recently held suggested a successful form of treatment for relapsing dislocation of the shoulder-joint. Dr. S. Hybbinette, senior surgeon to the Sabbatsberg Hospital in Stockholm, has during the past 16 years inserted a bone graft in 31 cases with complete restoration of mobility of the joint in 29 of the cases, along with a sense of security which enabled the patients to regain their normal working capacity. The case which gave the clue to this operation was that of a woman, an epileptic, whose shoulder had been out of joint some hundred times, and on whom Dr. Hybbinette operated in 1917.

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[1] Lettsom: His Life, Times, Friends, and Descendants. By J. Johnston Abraham, M.D., F.R.C.S. London: William Heinemann, Ltd. 1933. Pp. 498. 30s.

[2] Zeits. f. Kinderheilk., 1933, lv., 339.

Having freely exposed the joint, he found that its capsule was detached from the whole of the lower half of the circumference of the glenoid cavity. The periosteum had been displaced with the capsule, being detached from the anterior surface of the neck of the scapula. Not only was the articular cartilage of the glenoid cavity missing, but its bony margins were also worn down. The discovery of this condition suggested a bone graft which, inserted into the periosteal pocket formed by the chronic state of dislocation, would, by forming a new bony margin to the glenoid cavity, deepen it and thus facilitate the retention of the head of the humerus within it. Should the periosteal pocket not have been created by previous dislocations, it can be artificially made at the time of the operation by the detachment of periosteum from the anterior surface of the neck of the scapula. The bone graft is taken from the crest of the ilium. The operation is followed by an immobilisation of the arm in a scarf for a fortnight, at the end of which the patient is allowed up. After three weeks he makes movements of his arm in various directions only in so far as they cause no pain and encounter no obstruction. Six weeks after the operation he can usually raise his arm to the level of his shoulder, and put his hand on his forehead, nape of his neck, and back. At this stage he begins energetic, systematic exercises, which three months after the operation restore him to a complete capacity for work, even hard work. In the two cases in which the operation did not completely restore full working capacity it was partially vitiated by a local infection in the one case, in association with an attack of influenza, and by a fracture of the glenoid cavity with displacement of the bony fragment in the other.

OLD MICROSCOPES

Mr. R. A. Clay, D.Sc., and Mr. T. H. Court have compiled from original instruments and documents a History of the Microscope[1] up to the introduction of the achromatic lens. To the busy worker with the microscope, concerned more with the practical application of its disclosures, a volume such as this might not have an immediate appeal. The fact too that it deals with an early period, before the evolution of the achromatic microscope on which present-day work entirely depends, might still further tend to reduce his interest. And yet many who have even the slightest acquaintance with the mechanics and optics of the microscope can hardly fail to find here much that is fascinating even apart from its historic value. The writers are acknowledged authorities on the history of what is still the most important optical instrument. They have compiled with meticulous care and with great accuracy an account of such early microscopes, whether in this or in other countries, as may be necessary to unfold the story of its early evolutionary period. The information so gathered together is based upon examination of the instruments themselves; most of the examples described are to be found in the Science Museum at South Kensington or in the collection of the Royal Microscopical Society now being exhibited at B.M.A. House. Among living collectors Mr. Court holds a foremost place. Not only has he devoted many years to the gathering together of historical optical instruments and documents relating thereto, but he acquired many of the gems in the unrivalled collection of the late Sir Frank Crisp when its disposal at auction took place in 1925. Many points in early design and construction are suggestive of present-day practice, and the story may be commended to all who desire to know what is worth learning of a period when mechanical improvements were rapid but optical developments were awaiting disclosure of still unsuspected physical principles. Craftmanship was at a high level, particularly in this country which had such masters as Chippendale, and the influence of skilled workmanship is seen in the body-tubes of some of the microscopes described and even in the cases which contained them. The book is fully illustrated from photographs.

MAGISTRATES IN THE NEW JUVENILE COURTS

ONE of the provisions of the new Children and Young Persons Act is to set up juvenile courts under the care of justices chosen by panels of the bench of each area. These tribunals will have a delicate task, and the problems they will have to solve were the main subject of discussion at the conference of the Magistrates' Association held in London last week. As Lord Feversham pointed out, juvenile crime is likely to increase for a number of years with the increase in the number of children leaving school. The causes are numerous: unemployment is perhaps the chief, but another, as Mrs. C. D. Rackham suggested, is the fact that large numbers of boys and girls go straight into unregulated employment at 14, and are not eligible for national health or unemployment insurance benefits until two years later. Even if they pass into the factory or the shop the legislation that protects them is inadequate and out of date; it allows them to work for 60 and 72 hours a week respectively, with no medical attention. She considers that the overwork, strain, and lack of leisure and interest to which many young persons are subjected are a fruitful source of crime. The magistrates of the juvenile court, if they are to do their work properly, must be familiar with these and other predisposing causes of adolescent wrong-doing. At the same time when one reads[1] that in Manchester, for example, there will be 46 magistrates on the panel and that each of them will only do three days' duty a week for three weeks in the year, it is hard to see how they are going to acquire much skill through actual practice.

Recognising the importance of the new opportunity, the Magistrates' Association invited Dr. R. D. Gillespie and Dr. Helen Boyle to address them. Dr. Gillespie explained the scope and aims of the scientific method, and Dr. Helen Boyle pointed out the defect of the new Act in not sufficiently providing for psychological examination of the delinquent. Only five lines of the Home Office circular,[2] she said, dealt with medical examination, and she appealed to the magistrate, as the captain of the ship, to use the psychiatrist as his navigator in the rock-strewn seas. The subsequent discussion was illuminating as showing the views which magistrates of practical experience and conscientious sympathy with the medical side have formed. Mrs. P. E. Cusden, of Reading, pleaded for more use of the temporary provisions of the Mental Treatment Act, and a member of the Worthing bench spoke highly of the value of the local out-patient clinic for mental disease. Mr. Claud Mullins asked the psychiatrists to assure him that he could obtain effective treatment for any offender whom he considered to need it. The psychiatrists, he said, confined themselves almost entirely to diagnosis and were silent about treatment and results. In the two years he has been on the bench he has found his instincts entirely opposed to imprisoning certain types of sexual offenders, such as exhibitionists and homosexuals, but having no sure prospect of sending them away to get cured he has been forced to continue to sentence them to prison. Dr. Gillespie, in reply, said that treatment was long and costly, and was hindered chiefly by economic considerations. The Institute of Medical Psychology, he explained, had 1 paid whole-time officer and 11 voluntary assistants who could spare only a part of their time.

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[1] London: Charles Griffin and Co., Ltd. Pp. 266. With 164 illustrations. 30s.

[1] Manchester Guardian, Oct. 28th, p. 13.

[2] See THE LANCET, Sept. 23rd, p. 711.

RADIUM AT THE CENTRES

THE report of the Medical Research Council on medical uses of radium, summarising the work of the research centres in 1932,[1] shows, in spite of the scarcity of money, substantial advances in many fields. The centres are sending in less information concerning new developments in radiotherapeutic technique, for much of the ground has been sufficiently covered. On the other hand, statistical information has gained in value, as it now covers a large enough number of years to allow conclusions to be drawn with some certainty. More experimental work in radiology is being done than has ever been undertaken before. There have been several additions to the research centres, and the allocation of radium to the Council by the Radium Commission has given a great stimulus to general research into the action of radium on normal and malignant tissues. As larger quantities of radium become available for application externally, the tolerance of the skin becomes more and more important, for this factor limits the dose which may be given by any one port of entry. The report mentions several papers which seem to show that skin tolerance does not entirely depend on the time over which a dose is fractioned but also varies with the region of the body which it covers and with its own blood-supply. The new observations may, suggests the report, be very significant if they tend to cast doubt on the reliability as a unit of the skin erythema dose. For instance, observations in the Manchester Royal Infirmary and Holt Radium Institute seem to indicate that the skin of the scalp is about 50 per cent. more tolerant than the skin of other regions, these being grouped as if they all reacted in the same degree. Dr. J. C. Mottram has shown, in a communication to the Council, that regions with a depleted blood-supply react less than normal areas and that the skin of the face is more sensitive than that of the neck. If the skin is in any way a typical organ of the body, suggests the report, similar differences may be discovered in other organs and tissues, and the reaction to irradiation of a patient suffering from malignant disease may be proved to be not simply a question of the direct action upon the tumour but also of the general physiological response of the individual. These developments bear out the recent work of Dr. B. D. Pullinger on the indirect action of radium in affecting the blood-supply to a malignant growth.

The advantage of spreading the dose over a long period is being more and more recognised by radiologists, and the Radium Institute, which has just issued its annual report for 1932, has recently brought all its radium apparatus under review. Many of the tubes and applicators of high content have been dismantled and smaller units have been constructed. The flat applicators now fall into two groups: "full strength" containing 5 mg. and "half strength" containing 2·5 mg. of radium element per square centimetre. They are all square or rectangular, these shapes being more convenient for the treatment of certain surface lesions. Applicators of higher content can be made up out of the smaller units. The Institute has modified its technique for treatment of carcinoma of the cervix, and is well satisfied with the results which have so far been obtained. Intra-uterine and vaginal applications are still combined and the former have not been changed, but by increasing the secondary screening of the vaginal applicators from 1 mm. to 5 mm. it has been found possible to increase the dose without infringing the limits of tissue tolerance. Vulcanite or bakelite is now used instead of para rubber; the applicators are spheroidal or cylindrical with rounded ends, so that the pressure on the vaginal walls is more even. This arrangement will probably obviate the severe immediate reaction and delayed radium necrosis which used to occur in some cases where there was not sufficient room in the fornices for the lead tubes which were then inserted. The secondary screening was of rubber, but undue pressure from the ends was doubtless a predisposing cause. The activity of the applicators has been increased from 10 mg. of radium to 15 millicuries of radon; the primary screening is 1·5 mm. of platinum as before. The applicators are inserted under a general anæsthetic and left in position for 48 hours; another 48 hours later a vaginal application is made with the patient in the knee-chest position under the influence of scopolamine and omnopon. A week after the first combined application another is given. The total dose is 2880 mg. hrs. in the uterus and the equivalent of 5500 to 7300 mg. hrs. in the vagina, depending on whether three or four capsules are used. The old dosage in the vagina was 5040 mg. hrs. The new dosage has not caused local damage or any abnormal irritation of the rectum. The radon is to be replaced by radium as soon as more radium is available. The results of the new technique will be awaited with interest.

Although the development of technique has tended to slacken, there is still, it seems, room for ingenuity in rectal carcinoma. Although for many years growths in this site have been looked upon as hopeless or radio-resistant, some have responded well, and the Council sees indications that, with greater experience and better understanding of the dosage, treatment is becoming more effective. Its tables show 2 cases out of 8 surviving from 1926, 5 out of 31 surviving from 1928, and 4 out of 37 surviving from 1929. On the other hand, the five- and four-year survival figures from the Institute are negligible. The results from different clinics vary considerably, the best being from St. Bartholomew's, and this variation suggests that close study would produce interesting and helpful data.

ULTRAFILTRATION IN BACTERIOLOGY

FILTRATION has long been an integral part of bacteriological technique. Its uses—the separation of bacteria from their toxins, the sterilisation of fluids, and the separation of filtrable viruses from the ordinary bacteria—are well known. But the ordinary bacterial filters, even at their best, are unsatisfactory for some of these purposes. Especially is this so in the filtration and separation of filtrable viruses, where loss by adsorption and the inability to produce a closely graded series of efficient filters of varying porosity, has set a limit to their usefulness. This has led to the adaptation of collodion filters to bacteriological research—the so-called technique of ultrafiltration—and their use is extolled in a paper by R. Le Guyon.[1] He illustrates the value of ultrafiltration by examples from his own researches, and giving the details of his technique, he points out how much of the work in the past has been vitiated by the inability to reproduce at will collodion filters of a given porosity and even pore size. Those engaged in the study of viruses in this country will readily agree with this; in fact as far as they are concerned Le Guyon is preaching to the converted. But it is somewhat surprising to find so enthusiastic an advocate of ultrafiltration so sadly ignorant of what is happening beyond the confines of his own country. True he mentions the work of Bronfenbrenner on electrodialysis, but from beginning to end of his paper there is not one word of the work of W. J. Elford. The researches which Elford has carried out at the National Institute for Medical Research during the last few years, which have culminated in the production of the gradacol ultrafilters, stand in a class by themselves, and ample proof of the utility of these gradacol filters in the study of viruses has now been furnished. The size of many of the viruses has been determined with an accuracy not hitherto achieved. Moreover, by the selection of suitable filters it has been possible to free viruses from extraneous material and obtain them in a state of relative purity, and there can be little doubt that this has been of immense help to J. E. Barnard in his study of viruses by ultra-violet dark ground photomicrography. When, too, it is recalled that with gradacol membranes it is possible to separate viruses differing no more than 10 mu in size of particle, it will be realised to what a high degree of perfection ultrafiltration has been brought. The days of the filter candle seem to be numbered.

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[1] Special Report Series No. 186. London: H.M. Stationery Office. 1933. Pp. 36. 1s.

[1] Ann. de l'Inst. Pasteur, 1933, ii., 377.

JUVENILE RHEUMATISM AND ENVIRONMENT

A REPORT issued some years ago by the Medical Research Council[1] showed that the children living in certain poor-law residential schools were relatively free from rheumatic infection compared with children of their own class who were living at home. Dr. James L. Newman[2] finds a similarly low incidence among the mentally defective children in the Fountain Hospital, Tooting, and endeavours to explain it. Included in his study are 1200 patients already removed from hospital and 500 who were there at the time of his investigation. The average age on admission for the combined series was about 6 years and the age on discharge, while varying somewhat, was at about 10 for boys and 14 for girls. The children's social status was such that had they been mentally normal they would almost all have attended public elementary schools, and they may thus be regarded as fairly representative of working-class children of the age when rheumatic infection usually appears. Yet the total incidence of rheumatism arising in the hospital was only 0·4 per cent. It is still not very easy to find satisfactory figures for comparison among children living at home, but even if the comparatively low estimate of 2 per cent., quoted from J. A. Glover, is accepted the disparity is considerable. The standard of clothing, as would be expected, was very good, and exposure to adverse weather conditions was almost nil. Further, the wards at the Fountain Hospital are well-ventilated and kept at an even temperature. On the other hand, the buildings stand at a low elevation very near a river, and "there is strong presumptive evidence that these wards are actually damp." Dr. Newman thinks that the rooms in which the children live are probably damper than the middle floors of dwelling-houses, where the incidence of rheumatism is at its lowest, but not as damp as the ground-floor rooms, without a cellar below them, which provide the greatest incidence. As regards diet he believes that while the purely nutritive value is quite satisfactory there is evidence of inadequacy in the supply of vitamins, so that "the children are perpetually kept round the borderline of deficiency, requiring only a period of diminished food intake or perhaps a mild physical attack to upset their balance and produce definite pathological changes." Probably about 60 per cent. of those under investigation had an unhealthy nasopharynx. There were no signs of vermin among them; and, epidemiologically, their position is described as one of comparative isolation; nevertheless the incidence of scarlet fever in this series of 1700 children was 21 per cent., which is in evident contrast to that of rheumatism. Where the question of a nervous factor is concerned, the nature of the primary malady makes any conclusion somewhat tentative; but it may be noted that the children keep good regular hours and competition is absent from their labours. Summing up the various possibilities Dr. Newman introduces a useful comparison between the incidence of rheumatic infection at Eton and in the poor-law schools. On the whole he is inclined to think that the principal reasons for the low incidence of rheumatism at the Fountain Hospital are the absence of overcrowding and the moderate and equable temperature in which the children live.

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[1] Med. Research Council, Spec. Rep. Ser. No. 114. London. 1927.

[2] Jour. State Med., October, 1933, p. 590.

THE FitzPatrick lectures of the Royal College of Physicians of London will be given at the College, at 5 P.M., on Tuesday and Thursday next by Sir Humphry Rolleston. His subject is the History of the Endocrine Organs.

THE chairman and treasurers of the Westminster Hospital are issuing this week a public appeal for £350,000, the sum needed to carry out the rebuilding of the hospital on a new site in the Horseferry-road, Westminster. The governors of the hospital have an option upon this site until March 31st next, by which date the first instalment of not less than £100,000 must be available.

FOR the first time since 1921 a week has passed in which no case of small-pox was reported in England and Wales. Since the beginning of the year only 546 cases have been notified, compared with 1553 in the same period of 1932. The last year in which the total number of notifications fell below 2000 was 1922, and during each of the five years 1926–30 it exceeded 10,000, reaching a maximum (14,767) in 1927. No death ascribed to the disease has been recorded since the week ended on March 25th.

DONATIONS AND BEQUESTS.—Under the will of the late Miss Maria Richardson, who left estate of the gross value of over £157,000, the testatrix bequeathed £1000 each to St. Dunstan's, the Cancer Hospital, and the Cancer Research Institute. After other legacies the residue of the property will be divided equally between the Royal National Lifeboat Institution; the Royal Society for the Prevention of Cruelty to Animals; the Cancer Hospital; the Cancer Research Institute; the Miller Hospital, Greenwich; Charing Cross Hospital; the British Home for Incurables, Streatham; St. Dunstan's Hostel; the Hospital for Consumption, Brompton; the Royal Albert Orphanage for Boys, Bagshot; the National Hospital for Paralysed and Epileptic; the Asylum for Idiots, Earlswood; and Earl Haig's British Legion.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

IV.—THE PREVENTION OF MATERNAL MORTALITY [*]

IT is frequently stated in the lay press that 3000 women die annually in England and Wales as the result of childbearing. That this figure is approximately correct is borne out by the number of deaths from this cause recorded by the Registrar-General n the year 1928; it was 2920.

Table I. illustrates the maternal mortality figures n England and Wales in decades from 1855.

TABLE I

Years.	Death-rate per 1000 births. Total.	Puerperal fever.
1855–64	4·7	1·6
1865–74	5·0	1·9
1875–84	4·6	2·3
1885–94	5·1	2·6
1895–04	4·6	2·1
1905–14	3·9	1·6
1915–24	3·9	1·5
1925–30	4·2	1·7

This table has been prepared to emphasise the fact that the maternal mortality-rate has not improved during the last 70 years. During this period the introduction of antiseptic and aseptic methods has revolutionised surgery, and the increase of pathological knowledge has reduced to a minimum the previous gigantic death-rates from such diseases as diphtheria and typhoid fever.

Table II. illustrates the stationary maternal mortality figure for the last 20 years as compared with (1) the improvement in the general death-rate; (2) the marked improvement in the infantile death-rate.

TABLE II

Year.	General death-rate.	Infantile mortality-rate.	Total puerperal mortality.	Puerperal sepsis.
1911	14·6	129	3·87	1·43
1912	13·4	95	3·98	1·39
1913	13·8	109	3·96	1·26
1914	14·0	104	4·17	1·55
1915	15·7	106	4·18	1·47
1916	14·3	91	4·12	1·38
1917	14·2	91	3·89	1·31
1918	17·3	98	3·79	1·28
1919	18·5	93	4·37	1·67
1920	12·4	85	4·33	1·81
1921	12·1	81	3·91	1·38
1922	12·8	75	3·81	1·38
1923	11·6	69	3·81	1·30
1924	12·2	74	3·90	1·39
1925	12·2	75	4·08	1·56
1926	11·6	70	4·12	1·60
1927	12·3	70	4·11	1·57
1928	11·7	65	4·42	1·79
1929	13·4	74	4·33	1·80

In order to show how this country stands in comparison with other countries Table III. has been prepared. The comparison is only an accurate one for those countries (italicised) whose figures are for the same period both in length and date.

In order to show how this maternal mortality is made up I have drawn freely upon the report of the Departmental Committee on Maternal Mortality and Morbidity. Its report analysed the histories of 2000 women who had died as a result of childbearing, and found that 1596 deaths were due to this alone, while 404 deaths were due to intercurrent diseases which may or may not have been aggravated by pregnancy and/or labour. Of the 1596 maternal deaths due to childbearing alone, the cause of death is shown in Table IV.

TABLE III

Countries.	Years.	Per 1000 live births.
Holland	5 (1921–25)	2·4
France	3 (1925–27)	2·5
Denmark	5 (1923–27)	*2·6*
Italy	5 (1922–26)	2·8
Norway	5 (1923–27)	*2·8*
Finland		*3·1*
England and Wales		*4·0*
Switzerland		*4·4*
New Zealand		*4·8*
South Africa		*4·9*
Germany		*5·1*
Australia		*5·5*
Belgium		*5·6*
U.S.A.	5 (1921–25)	8·3

TABLE IV

				Per cent.
(1) Sepsis	616			38·6
(2) Eclampsia	218			13·6
(3) Other toxæmias	99			6·2
(4) Shock, &c.	145			9·0
(5) Antepartum hæmorrhage.	125 <	P.P. Acc. H.	72 53	7·8
(6) Postpartum hæmorrhage.	92			5·7
(7) Embolism	113			7·0
(8) Abortion	168			10·5
(9) Ectopic	20			1·2

These 1596 maternal deaths were analysed in another way, with a view to ascertaining whether death was inevitable or might have been avoided in more favourable circumstances. This necessitated the exclusion of all cases of abortion and ectopic gestation (188) and of those cases in which there was insufficient information to form an opinion (122). The remainder are classified under two headings:—

(1) Those in which no departure from established practice was found which had a causal relationship to the death.

(2) Those in which a "primary avoidable factor" was discovered. It was felt that the object of sound and skilful midwifery is to prevent deviation from the normal rather than to treat the abnormal after it has arisen. A "primary avoidable factor" was therefore said to be present when the *information* in the case-history permitted the discovery of the first point at which such deviation occurred, whether before, during, or after the birth of the child.

In order to make clear what this "primary avoidable factor" means, hypothetical examples may be suggested. For instance, a doctor may discover albumin in the urine and prescribe adequate treatment; the patient may fail to follow his instructions and develop eclampsia. Whether the doctor's treatment of the eclampsia is entirely adequate or not, the "primary avoidable factor" is the failure of the patient to carry out the instructions given, since had she done so eclampsia would presumably not have supervened. Or, again, a woman may die from sepsis following complicated labour; the complication might have been avoided by efficient antenatal care which was not in fact given. The question here is not the efficacy of the method by which the complication was treated in hospital, but the failure of the person, or persons, responsible for the antenatal care to foresee the complication which ended in a difficult delivery, and the "primary avoidable factor" here is inadequate antenatal supervision. It will therefore be seen that the classification has regard only to the primary apparent error in management—i.e., if the patient had a serious pathological condition which ought to have been discovered by antenatal examination, and also an attendant whose management of the case showed departure from established practice, the death is grouped only under the antenatal avoidable condition and *not under the mismanagement of labour*. Bearing in mind the difficulties of such an analysis, the results are shown in Table V. If these figures are examined it is seen that in 626 cases, 39 per cent. of the total deaths directly due to childbirth, a primary *avoidable* cause was found, while if we exclude Groups 2 and 3 the net percentage of avoidable deaths is as high as 48.

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[*] I should like to acknowledge the free use I have made of the reports of the Departmental Committee on Maternal Mortality and Morbidity in preparing this lecture.—W. G.

TABLE V

Group.		
1	Show "primary avoidable factor" ..	626
2	No departure from established practice	660
3	Abortion and ectopic, i.e., not strictly relevant	188
4	Information insufficient to classify ..	122
		1596

Up to this point I have tried to demonstrate how high our maternal mortality-rate is at present, how it maintains its level in spite of increased medical knowledge, the different causes which go to make up the total, and, most important of all, the fact that in a series of 2000 deaths 626 (31 per cent.) might have been avoided under better conditions. I propose to pass from this review of figures and the depressing side of the subject to the practical aspect of showing you how some of these fatalities can be avoided with consequent reduction in the mortality-rate. How can this be done?

Antenatal supervision is now recognised as an essential part of the care of pregnant women, and yet there are still many women who go through childbearing without this great and invaluable safeguard. It is of interest to note that antenatal supervision was first practised about 40 years ago, but it was not until 20 years later that it became the established practice in lying-in hospitals and maternity departments of the general hospitals.

Abnormal Conditions Preventable by Antenatal Care

What are the abnormal conditions that can be foreseen and possibly prevented by antenatal care?

(1) *Toxæmia.*—I should exaggerate if I said that this condition were entirely preventable, but it is almost so. In those patients who are instructed strictly to avoid constipation and are advised with regard to food and drink, the incidence of toxæmia is at a minimum.

I consider the question of fluid intake in pregnant women of some importance, and always exhort them to drink double the amount of fluid they would take when not pregnant, the best fluid being water. This permits of the easy excretion of the waste products of both mother and child. The idea underlying this homely advice is the adoption for prophylactic purposes of the most efficient therapeutic agent known—viz., water—in the treatment of toxæmia, should it arise. When toxæmia has developed and is recognised, thorough treatment is necessary. Incomplete measures are a source of danger to the patient. By the efficient treatment of albuminuria as soon as it is recognised almost every case of eclampsia can be prevented. There are a few cases of eclampsia, not 5 per cent., which are termed "fulminant" because of the suddenness of their onset without previous symptoms, and the virulence of the toxæmia exhibited. This small group can never be foreseen, nor prevented in the present state of our knowledge.

I do not propose to describe the treatment of toxæmia; this can be found in every text-book, but its recognition I shall deal with in describing the routine antenatal examination later.

(2) *Abnormal labour due to malpresentations.*—B the efficient performance of abdominal palpation i the antenatal routine, the presentation of the chil should be made out in practically all pregnan women. Malpresentations are most frequently cause by contracted pelvis, and on every occasion in whic an abnormal presentation of the child is met with in addition to correcting the presentation, it is mos necessary to assure oneself that disproportion i not present. There are a few pregnant women i whom the presentation cannot be made out satis factorily, possibly owing to a thick abdominal wall a tense uterine wall from over-distension with twins hydramnios, or malformation of the child. Doub should not be allowed to exist as to the real positio of the child or children in utero, as an X ray photo graph of the pregnant uterus will reveal its content clear in every detail. No patient should be considere too poor, too nervous, or *too ill to be X rayed.*

(3) *Obstructed labour.*—Whatever the cause of thi condition, it should be entirely *preventable by th* intelligent and efficient performance of the antenata examination. This entails recognition of the presenta tion of the child, its correction to a vertex if abnormal and then the comparison of the size of the fœtal head with that of the pelvis so that one may be certai that there will be room for the head to be drive through the pelvis when the uterus begins to contract.

(4) *Sepsis.*—With a little thought it should b obvious how many instances of this complicatio can be prevented by antenatal care. It is the most frequent cause of fatalities, as is shown in Table IV., a fact only too well known to those of us who practis midwifery. Sepsis is more likely to be met with in those patients whose labour has been complicated *than in normal cases. Antenatal care should prevent* obstructed and abnormal labour, in both of which *manipulative measures would be called for* with consequent increase in the incidence of sepsis. Sepsis is frequently met with in patients possessing foci of infection, and these should be treated and, if possible, cleared up before labour is due.

(5) *Breast sepsis in the puerperium* is usually due to a lack of preparation in pregnancy, and every patient should be instructed how to prepare for the nursing of her child. You may feel that these breast conditions are trivial and rarely serious; I can only tell you that in the Registrar-General's report for 1928 eight women died from "puerperal disease of the breast," and probably not one should have done so.

The Routine Antenatal Examination

When the pregnant woman is first seen, a history should be taken and attention paid to the history of previous pregnancies. We all know the variation in ease and safety which attends the birth of first and subsequent children. Almost all complications are more likely to affect the primipara than the multipara. The details of previous labours, and particularly of stillbirths and abortions, should be obtained if it is possible.

At the first visit a general examination of the patient is necessary. The heart and lungs should be examined, the blood pressure recorded, and a search made for septic foci. The latter group necessitates an examination of the teeth, and in view of the well-known tendency to caries to begin or progress during pregnancy, the mouth should be rendered as clean as possible at an early date. A history of repeated sore-throats requires investigation. Purulent vaginal discharge will be discussed below under the heading of vaginal examination. The recognition and treatment of these foci is important in view of some cases of puerperal infection, even septicæmia, being possibly of autogenous origin. If the patient is anæmic, as demonstrated by a blood examination, the condition should be remedied by giving iron or, if necessary, a blood transfusion.

Examination of the breasts.—Breast-feeding remains the most satisfactory method for the new-born child. To render nursing as easy and comfortable as it can be made and to avoid infection of the breast as far as possible, the following routine should be carried out.

The nipples should be examined, and if depressed the patient should be taught how to pull them out, to keep them clean by daily washing, after which she should dry them by rough friction. The skin of the nipple and areola should be rubbed with lanoline daily throughout pregnancy, alternating the grease with spirit during the last two months.

Abdominal examination.—The presentation of the child should be determined accurately during the last four weeks of pregnancy; before this date alterations in the position of the child are so common that the presentation may be disregarded. If an abnormal presentation—e.g., a breech—is discovered at the thirty-sixth week its correction should be attempted by external version before the thirty-eighth week. An anæsthetic may render external version possible when it could not otherwise be performed.

The most important single object of the antenatal examination is the recognition of disproportion between the size of the head and the pelvis. Pelvic measurements will help in giving the attendant an idea of the size of the pelvis, but it is not possible to form an opinion of the mechanical course of the labour from them alone.

An attempt should be made to press the head into the pelvic cavity, if it is not already lying there. This is done by grasping the head between the thumb and fingers of one hand, while pressure upon the fundus is exerted by the other hand. Munro Kerr's method can be carried out as follows: The patient lies on her back with her knees raised and separated; the head is grasped by the right hand and pressed into the pelvic brim, two gloved fingers of the left hand are placed in the vagina and appreciate the amount and manner of engagement of the head. This method may be employed without anæsthesia, but more accuracy is obtained when the woman is anæsthetised. If the case is one in which a tight fit is found though the head will press down, the examination should be repeated in a fortnight.

Vaginal examination.—Digital examination of the pelvic cavity possesses an advantage over external pelvic measurements in that an idea can be obtained of the actual space through which the head must pass. In the normal pelvis the promontory of the sacrum cannot be felt, though it can be reached in the flat pelvis. In the generally contracted pelvis the greater part of the sacrum can be felt, but the promontory is usually out of reach. Before the fingers are passed into the vagina, the vulva should be inspected for the presence of sores and purulent discharge. If the latter is discovered suspicion of gonococcal infection will be aroused, particularly if vulvitis and urethritis are present. Gonorrhœa can only be diagnosed by a bacteriological examination of smears of the discharge from both the urethral and cervical canals. In obtaining the latter, care should be taken to avoid contamination of the material from the cervix with pus from the vagina.

Examination of the urine.—It is necessary to test the urine for albumin once a month in the second half of pregnancy and fortnightly in the last month. This regular testing will greatly diminish the incidence of eclampsia, if all patients in whom albumin is discovered are subjected to strict treatment. Indeed, much has already been accomplished; eclampsia is becoming much less frequent. Before treatment is carried out it is necessary to confirm the presence of albumin in a specimen collected by catheter. If albumin is present in a catheter specimen, a microscopic examination should be made to exclude the presence of pus, due to pyelitis or cystitis. The urine should also be examined for sugar, which if present may be lactose or glucose. When the latter is discovered a blood-sugar estimation is necessary; if this is normal the glycosuria can be neglected.

Blood-pressure readings should be taken in all patients at each antenatal visit. Certain American observers believe that the earliest sign of toxæmia is a steady rise in the blood pressure; they even go so far as to neglect examination of the urine for albumin if the blood-pressure reading is normal. I make it my practice, if the pressure reaches 150 and no other symptoms of toxæmia are present, to treat the patient as suffering from toxæmia.

Lastly, a word about the frequency of antenatal examinations. If the woman is well and the urinary examination or blood-pressure reading (whichever you adopt) is satisfactory, it will not be necessary to examine her again after the first visit until the thirty-fourth week, and then at fortnightly intervals until labour begins.

The Principal Causes of Death and their Avoidance

Now if I turn again to Table IV. you will see that I have suggested, and I hope proved to all, that by efficient antenatal care an improvement in maternal mortality can be obtained in the following items of this table: sepsis, toxæmia, shock, and probably embolism. In support of this I may add that at a large London hospital before the practice of antenatal supervision, 23,591 cases were attended with a death-rate of 4·4 per 1000 live births, and after its adoption, 21,425 cases were attended with a death-rate of 1·03 per 1000 live births.

But antenatal supervision is not the only means that can be used to lower these figures, and I propose to deal briefly with each cause of death, outlining methods which will assist us in our struggle for better results.

SEPSIS

This is the commonest cause of death in the child-bearing woman; its incidence can be lessened, as you have been told, by antenatal care, though it is only the smaller part of the group which will be affected by this treatment. The majority of cases arise as the result of some condition, occurring at the time of labour, which could not be foreseen during pregnancy.

Organisms are of course the basic cause of sepsis, but it is generally found that some factor which lowers the patient's resistance is present in the grave or fatal cases. These are: severe hæmorrhage during labour, laceration of the cervix, vagina, or perineum, repeated and unclean manipulations, and exhaustion of the patient from delay in labour. Without the presence of organisms these conditions could not produce sepsis, but organisms are so frequently present in the lower portion of the birth canal, or are implanted by the manipulations called for by difficult labour, that in actual practice sepsis usually follows damage and lowered resistance. Predisposing factors to sepsis are:—

(1) *Contact infection* from patient to patient has almost ceased to exist, compared with 70 years ago, when nearly every case was the result of direct transference of infection. On the other hand, there is evidence to show that a number of cases occur as a result of the spread of infection from the infected air-passages of the attendant, doctor, or nurse.

An excellent article by J. Smith[1] proves this point and draws attention to the necessity of an efficient mask being worn by the person delivering the patient. In the labour ward of this hospital masks are worn by everyone entering the ward if a delivery is in progress.

(2) *Previous puerperal infection* predisposes to infection at a subsequent confinement, and, in addition, the mortality-rate is higher in the secondary attacks.

(3) *Lacerations* are an obvious factor in providing a wound for entry of organisms.

(4) *Manual removal of placenta* is an operation which exposes the patient to the risk of sepsis. It is said to occur after manual removal in between 25 and 42 per cent. (different observers' figures) of cases.

(5) *Induction of labour* under surgical conditions by the introduction of bougies, stomach-tube, or small bags is an operation which is remarkably free from septic complications. Deaths do, however, occur from sepsis following this operation, and it should never be embarked upon without a very definite indication.

(6) *Exploration of the uterus* in the puerperium either before or after the onset of sepsis is an operation attended by the greatest danger. The curette should never be used upon the puerperal uterus whether this is infected or not. Exploration with the gloved finger is only permissible if a piece of placenta has been left behind and is causing severe bleeding. Similarly intra-uterine douching of the puerperal uterus is more dangerous than useful.

(7) *Hæmorrhage* in labour lowers the patient's resistance to organisms and increases the liability to and danger from infection.

The *prevention of sepsis* therefore can be carried out:—

(A) By antenatal care—

(*a*) Prevention of abnormal labour or, if it is inevitable, preparation for it.

(*b*) Cleaning up focal sepsis, throat, teeth, cervicitis, urinary, &c.

(B) In the conduct of labour by—

(*a*) Wearing masks.

(*b*) Avoidance of manipulations as far as possible, and only making a minimum of vaginal examinations.

(*c*) Wearing rubber gloves: this is an important item, as smooth gloves are sterilised so much more easily and completely than the skin of the hand. See experiments of L. Colebrook.[2]

(*d*) Immediate repair of lacerations.

(*e*) Avoidance of induction of labour and exploration of the puerperal uterus.

(*f*) After hæmorrhage, by restoring the patient's resistance by blood transfusion whenever possible.

(*g*) Preparation of vulva and perineum for delivery.

The vulva should be shaved or the hair cut closely. The area should then be thoroughly washed with warm sterilised (chemically) water and soap. The antiseptic chosen to sterilise the water must be one that does not decompose soap, or interfere with the action of iodine, which is to be used subsequently. A very suitable agent is weak iodine solution 1 drachm of a 2 per cent. solution to a pint of water. After drying with a perfectly clean towel, iodine 2 per cent. solution should be painted on the skin of the vulva and perineum and allowed to dry. No attempt whatever should be made to sterilise the vagina or cervix.

(*h*) All instruments should be boiled shortly before use and left in the water, or taken out and wrapped in a sterile towel until required, never being exposed for long.

TOXÆMIA

The prevention and recognition of this condition has been dealt with fully above. I can only reiterate that the fatal cases can be reduced to a tenth of their number by antenatal examination and the adoption of strict treatment as soon as the condition is recognised.

SHOCK

The term "obstetric shock" is one which is used to indicate a condition occurring after parturition similar to that seen after surgical procedures. It is seen most frequently after difficult and prolonged labours and where there has been considerable hæmorrhage, though it is met with where labour has been normal. Certain operations in midwifery definitely predispose to this condition:—

(*a*) Forcible manual dilatation of the cervix previous to extraction.

(*b*) Dragging the child through the undilated cervix with forceps.

(*c*) Manual removal of the placenta after a long labour.

(*d*) Rough and unintelligent attempts to expel the placenta.

It is more likely to occur in women debilitated by hæmorrhage or toxæmia, and after the infliction of serious injuries on the birth canal, apart from the loss of blood usually associated with them. Acidosis predisposes to shock, and when this is present I feel that chloroform as an anæsthetic is dangerous, in that it increases the acidosis and therefore the shock; ether is preferable.

The prevention of shock consists essentially in the *avoidance* of violent measures to achieve delivery, under all circumstances; in a long labour it consists in keeping the patient warm, and in providing her with sleep and a certain amount of easily assimilable food. When she vomits continually much valuable help can be given her by administering rectal salines containing glucose at regular intervals.

Once shock has supervened treatment consists in keeping the patient warm, administering glucose in saline by the rectum, under the skin, or intravenously. Blood transfusion when there has been hæmorrhage. An injection of morphia gr. ¼ is always of great use.

ANTEPARTUM HÆMORRHAGE

Neither variety of antepartum hæmorrhage can be prevented or even recognised until the patient begins to bleed. The only way in which the mortality from placenta prævia and accidental hæmorrhage can be diminished is: (1) by the universal appreciation that both are serious conditions, in either of which no patient is safe until her uterus is empty; (2) by similar appreciation that these are conditions in which delivery in home surroundings is not in the interests of the patient, who should be transferred to a nursing-home or hospital as soon as she is fit to be moved. The first symptom is usually a small and sometimes repeated loss of blood. This should serve as a warning and suggest the necessity of putting the patient in the best environment for treatment.

I do not propose to discuss the different methods of treating placenta prævia and accidental hæmorrhage, but to mention some broad principles by which lives can be saved.

No more valuable dictum has ever been uttered than that of Herman in summing up the treatment of placenta prævia, namely, "early version, slow extraction, and antisepsis."

Early version, which should be by the external method, followed by bringing down a leg, because by this one operation alone the bleeding is stopped until the uterus expels the child. It does away with the necessity for further manipulations across the placental site, everyone of which adds to the amount of bleeding and the likelihood of sepsis. *Slow extraction* is imperative, since it lessens

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[1] Causation and Source of Infection in Puerperal Fever. Department of Health for Scotland. 1931.

[2] L. Colebrook: *Interim Report of Departmental Committee* on Maternal Mortality and Morbidity. H.M. Stationery Office. Appendix D. 1930.

shock, avoids the grave danger of tearing the lower uterine segment through the placental site, and allows of treatment to counteract the loss of blood before the actual delivery occurs. *Antisepsis* needs no explanation; of patients suffering from placenta prævia probably more die from sepsis than from bleeding.

In accidental hæmorrhage the patient, in addition to suffering from the effects of hæmorrhage, is also toxæmic. In the treatment of this condition the principles are: to evoke uterine contractions, which being done, never to allow them to pass off until the uterus is empty, and to allow the uterus to empty itself by its own contractions.

I have not mentioned the operation for Cæsarean section which may be a good method in both these conditions. It falls to the lot of few of us to have at our command the surroundings in which it is safe to perform the operation, and the constant practice of abdominal surgery, without both of which the use of this operation would be more dangerous than accouchement forcé.

The means of *counteracting blood loss* include: (1) blood transfusion. This therapeutic measure cannot be too highly valued by anyone who has charge of a maternity department. Of necessity patients requiring Cæsarean section with its sometimes profuse bleeding, and cases of antepartum hæmorrhage are dealt with there. In such women blood transfusion is of inestimable value, both immediately in preventing death from hæmorrhage or shock, and in its later effect by assisting them in their struggle against organisms. I myself am convinced that in those patients who have bled excessively, and who are *not* suffering from infection, blood transfusion will prevent puerperal thrombosis. (2) Saline solution with or without glucose can be given per rectum, subcutaneously into the axillæ, or, in more severe shock, intravenously. (3) Intravenous gum saline solution is of more permanent value than saline solution alone. The addition of a colloid, gum, prevents the too rapid diffusion of the saline solution out of the small blood-vessels into the surrounding tissues.

POSTPARTUM HÆMORRHAGE

Postpartum hæmorrhage is either *primary*, occurring during or immediately after labour, or more rarely *secondary*, which is seen some days afterwards, and is due either to retained products or sepsis. When secondary postpartum hæmorrhage is due to sepsis it is only symptomatic. But when due to retained products, it demands exploration and evacuation of the uterus by the gloved finger under sterile conditions. It should be possible to prevent completely secondary postpartum hæmorrhage from this cause by a careful examination of the placenta and membranes at the end of labour, an essential part of the management of the third stage which must never be omitted.

Primary postpartum hæmorrhage is the more common and more serious. Almost all cases of this severe form are preventable, and fatal cases should be unknown when efficient medical aid is at hand. Their frequency depends upon the manner in which labour is conducted, chiefly in the third stage. A loss of blood amounting to one or even two pints is not very uncommon and not always avoidable.

The *prophylactic* treatment of postpartum hæmorrhage is of great importance. Labour should be properly managed, particularly should the second stage be terminated by forceps delivery, if the uterus shows signs of becoming exhausted. During the third stage the uterus should be properly held, so that undue relaxation and distension can be appreciated as early as they occur. If bleeding does occur it is important to stop it as soon as possible. At every labour the appliances used in the prevention of bleeding must be available for use at a moment's notice—a hypodermic syringe, sterile and loaded with Pituitrin or Femergen, a douche can and sterilised intra-uterine douche nozzle, also plenty of hot boiled water.

Postpartum hæmorrhage may occur from lacerations, very occasionally the result of normal labour, more commonly caused by instrumental delivery.

A tear of the cervix is the most common site from which such bleeding comes. The fact that the bleeding begins at the birth of the child, continues at the same rate and in the presence of a well-retracted uterus, enables its cause to be recognised without any doubt. The ideal treatment is immediate suture of the laceration, but if this is not possible a hot douche, followed by packing the tear with sterile gauze, will stop the bleeding.

In all cases of hæmorrhage in connexion with labour, it is striking how well women will stand a considerable loss of blood. But, on the other hand, it cannot be too widely realised that a second hæmorrhage, however small, has effects out of all proportion to its amount. For this reason, the methods of counteracting blood loss should be carried out without delay in all patients who have bled profusely.

EMBOLISM

I feel sure that the majority of deaths from this cause must have been in septic cases and that sepsis was the cause of the pathological changes which led up to the fatal result. A few patients develop thrombosis and subsequent embolism as an after-result of excessive bleeding, and a very few in whom no cause can be found. In the septic group the prevention of embolism can be achieved by the prevention of sepsis. In that class which follows hæmorrhage I have in my ward here reduced the incidence of thrombosis and embolism to a minimum, by the routine use of blood transfusion, in all patients whose red cell count is below 2¼ million, and whose hæmoglobin is less than 55 per cent.

The Primary Avoidable Factor Analysed

I hope that I have given sufficient details to show how the different causes of death in Table IV. are almost entirely capable of prevention, or if they occur can be treated so as to avoid a fatal termination. I should like to go back to an earlier part of the lecture where I told you that in the analysis of 2000 maternal deaths 626 were considered to be avoidable. These 626 cases all presented a primary avoidable factor which was analysed and put into four groups (see Table VI.).

TABLE VI

	Deaths.
(1) Omission or inadequacy of antenatal examination	226
(2) Error of judgment in management of case ..	224
(3) Lack of reasonable facilities	64
(4) Negligence of the patient or her friends ..	112

These groups must be considered separately:—

(1) *Omission or inadequacy of antenatal examination* (226 deaths).—In this group it was found that the person responsible for the patient had made no antenatal examination whatever, or had been denied the opportunity to do so by the patient in 157 cases. In the remaining 69 cases antenatal examination was carried out, but a gross abnormality which must have been present was not detected.

This large proportion, nearly 70 per cent., of patients in whom antenatal treatment was lacking entirely, refers only to the cases in which it was considered to be the avoidable factor leading to the fatality. There were many more cases in the total 2000, but naturally the percentage would be lower. It seems to me that no one here can have the least doubt that antenatal care presents a readily available means of reducing maternal mortality.

(2) *Errors of judgment* (224 deaths).—In any group of cases the responsibility for such errors will always be seen to rest more on the doctor than on the midwife. This is due to the fact that the latter can and does pass her responsibility on to the doctor, but he, unhappy man, has always to make the decision as to the method of treatment. Those of us who practise obstetrics are only human, and errors of judgment are bound to occur at times. I have tried to present to you main principles in the management of labour, both normal and abnormal, by which a considerable number of these errors can be avoided.

(3) *Lack of reasonable facilities* (64 deaths).—In this group are included cases in which no skilled assistance was available, possibly because the patients lived in very remote country districts, labour taking place in unsuitable surroundings. Occasionally the most luxurious bedroom may be as unsuitable as the filthiest cottage. There is no doubt that labour in a nursing-home or hospital is safest for the patient.

(4) *Negligence of the patient or her friends* (112 deaths).—This usually takes the form of failing to follow the doctor's advice, or ignoring symptoms and signs of grave illness. In all cases there is an absence of the necessary coöperation on the part of the patient.

Conclusion

But whatever its cause the two following groups of figures prove that the maternal mortality-rate *can be lowered* :—

(1) *General Lying-in Hospital, Lambeth.*—Ten years, 1920–29, hospital and district cases—25,906. Mortality-rate 1·31 per 1000 births.

(2) *Queen's Nurses.*—For year 1928, all district work —65,077 cases. Mortality-rate 1·9 per 1000 births.

I trust that I have convinced you that the present high maternal mortality can be lowered, and that this achievement lies in the hands of doctors, students, and nurses.

W. GILLIATT, M.D. Lond., F.R.C.S. Eng.
Obstetric and Gynæcological Surgeon, King's College Hospital; and Surgeon, Samaritan Hospital.

POST-GRADUATE LECTURES

THE notes which follow are summaries of addresses delivered at the London Hospital (Dr. Wall and Dr. Tallermann) and at Westminster Hospital (Mr. Cade). The addresses formed part of the autumn courses arranged by these hospitals for their former students.

SOME MEDICAL COMPLICATIONS OF PREGNANCY

(DR. CECIL WALL)

I PROPOSE to-day to discuss certain complications of pregnancy in which, in hospitals, the physician's aid is usually sought by the obstetrician. In general practice, where you play the double rôle, these complications may at times give you great anxiety.

I will begin with *pulmonary tuberculosis*, and will take as a text the case of a woman whom I have watched for the past three years.

She was a young woman, 25 years of age and recently married, when in October, 1930, being two months pregnant, she attended another hospital and was found to be suffering from pulmonary tuberculosis. The advice given was that the pregnancy should be terminated and that at the same time she should be sterilised. She refused the sterilisation but consented to the abortion which was effected by a tent. She was then transferred to the Brompton Hospital and came under my care. I found slight tuberculous infiltration at the apex of one lung; evidence of activity of the disease soon disappeared and she was transferred to Frimley; she went through the usual course of graded exercise and was discharged in March, 1931, with the disease arrested.

In the following July she was found to be pregnant again but refused to have the pregnancy interrupted. In January, 1932, she was delivered by Cæsarean section at the hospital at which she had attended first. She nursed the baby until May, both keeping well. She became pregnant again in November, 1932, and on going to a third hospital was persuaded to submit to Cæsarean section again at about the twenty-fourth week, and agreed to sterilisation. I heard of her last in June of this year. Both she and her child were then well.

Taking the incidents in order, I think that the advice given at first to terminate the pregnancy was good, but that she was wise to refuse sterilisation. Pregnancy itself does not affect the prognosis of pulmonary tuberculosis. My own experience is fully in accord with the recent statistical literature bearing on the problem. There are, however, certain practical difficulties in the management of the treatment of the tuberculosis if pregnancy coexists. Chest hospitals and sanatoria find difficulty in admitting pregnant women, and lying-in hospitals have not facilities for dealing with tuberculosis. Furthermore, common experience shows that the risk of recrudescence of the disease as the result of physical overstrain does not cease to be appreciable until at least two years have elapsed without recurrence of symptoms. Labour, lactation, and the care of the child all mean considerable physical strain; consequently the advice in this case that the pregnancy should be terminated in its early stage was sound and the method adopted was good. Hysterotomy and sterilisation in my opinion were contra-indicated; even a slight cutting operation when the tuberculosis has been active recently may give rise to an exacerbation and involves more risk than induction by a sound or tent. Undue pessimism with regard to the prognosis in pulmonary tuberculosis led to the advice that this woman should be sterilised.

If the pregnancy had been further advanced when the tuberculosis was recognised the advice might, I suggest, have been different; after the twentieth week the termination of the pregnancy artificially is associated with greater risk than allowing it to continue. Associated pregnancy does not alter the prognosis of the tuberculosis or contra-indicate the approved methods of treatment by artificial pneumothorax, sanocrysin, and the like. Labour at term undoubtedly may lead to an exacerbation of the disease, but unless there are obstetric complications it seems to involve less risk than operative procedures in advanced pregnancy.

The second pregnancy in July, 1931, so soon after discharge from the sanatorium was undesirable, and it would have been safer for her to take the advice to have it ended; however, she decided to allow the gestation to continue, and submitted to Cæsarean section at about the twenty-sixth week with satisfactory results both to her and to the child. In the absence of any obstetric complications it is difficult to understand why nature was not allowed to pursue its normal course. I know that modern surgery has reduced almost to the vanishing point the risk of abdominal operations, but as we came together to this theatre Mr. R. A. Brews confirmed my opinion that the fatigue after a natural labour disappears in a few hours, whereas the after-effects of Cæsarean section may not have disappeared in a week. Fatigue is always dangerous to a tuberculous person, and this should be borne in mind when advising the mode of delivery of a tuberculous woman. In the case I quote the result was happy, but I cannot help thinking that natural labour would have involved less risk than Cæsarean section.

The third pregnancy was recognised in November, 1932, but was allowed to continue until well advanced and then terminated by a second Cæsarean section before the child was viable, though there was no evidence of recrudescence of the tuberculosis; at the same time the patient was sterilised. I must confess my doubts as to the wisdom of this treatment; two years had elapsed since the woman was discharged from Frimley, and she had not relapsed in spite of the strain to which she had been submitted. Natural labour at term would have been less exhausting than an abdominal operation, and less drastic measures than sterilisation might have been adopted to prevent future pregnancies.

I have spent some time in discussing tuberculosis and pregnancy, but would like to draw your attention briefly to some other medical complications with which you may have to deal. A good many years ago Dr. Russell Andrews and I showed by statistics that it was unwise to interfere with the pregnancy of a *choreic* patient, and that the treatment of the chorea satisfied the requirements of the case. Since then many observers have shown that pregnancy associated with *morbus cordis* should generally be allowed to pursue a natural course; the child is usually small and the labour easy.

Dr. Eric Skipper has shown in his paper in the last number of the *Quarterly Journal of Medicine* that in *diabetics* pregnancy may be allowed to pursue a normal course if treatment by insulin is provided.

VOMITING AND COLIC IN EARLY INFANCY

(Dr. Kenneth Tallerman)

Vomiting and colic are so common in young infants that they demand serious consideration. They are both, however, only symptoms, and not diseases in themselves: on this account the underlying cause must always be sought. Although one sometimes thinks of colic as meaning pain in the stomach, it may actually be pain arising from various intra-abdominal conditions.

The causes of vomiting and colic in infants may conveniently be divided into those due to mismanagement and dietary disorders, and those due to true organic disease. The former group are by far the more frequently met with. Among these one must first place *underfeeding.* Here, in addition to true colic, there is restlessness, inability to sleep properly, marked loss of weight, and frequently diarrhœa characterised by the passage of so-called "hunger stools." Such stools are small, very dark green in colour, and mixed with a little mucus. In the case of breast-fed infants, the diagnosis can be clinched by carrying out a *series* of test feeds, and noting the average amount taken by the infant; it is a mistake to place reliance on a single test feed, since the quantity of milk obtained by any infant varies at the different feedings throughout the day. With the artificially fed child, a consideration of its total food intake, in relation to its age and weight, should always give the required information as to whether it is being underfed. Treatment consists, on the one hand, in complementing the breast milk, and, on the other hand, in increasing the amount of artificial food. It is a grave mistake to substitute a bottle feed for a breast feed in the case of an underfed breast-fed infant, since the secretion of breast milk can be increased only by adequate stimulation, and the omission of a breast feed obviously reduces this stimulation. The artificially fed baby is not infrequently given feeds too large in volume and too dilute; for this reason the child is under-nourished and loses weight. As a result it suffers from restlessness and screaming attacks, and at the same time it is made uncomfortable, and vomiting is induced, by the large bulk of each feed, consisting mostly of water. It is often forgotten that no matter how large the feed, its caloric value is entirely dependent upon the concentration of the mixture used, and an infant may easily be distended with fluid and at the same time grossly underfed. From this point of view dried milks are of especial value, since they can be given in full strength (1 drachm of milk powder to 1 oz. of water) after the early days of life, thus providing in relatively small bulk a feed of high caloric value, which forms in the infant's stomach a fine flocculent curd similar to that of breast milk. It is the size and toughness of the curd formed from fresh cow's milk, and not the high protein content, per se, that is chiefly responsible for the digestive disturbances it causes when given to young infants. The fear of giving an infant too high a protein content in milk mixtures is nothing but a bogy.

The next common cause of vomiting and colic is *overfeeding.* Here the child presents marked signs of discomfort in addition to the other symptoms, and there is a rapid gain in weight, sometimes accompanied by diarrhœa. Here again diagnosis depends upon a consideration of the infant's actual intake as compared with its food requirement. The treatment in such cases is to cut down the number of feedings, or to decrease the actual food intake at each feeding. Overfeeding in breast-fed infants is very common, and the mother often inadvertently makes matters worse by acting on the assumption that the child is hungry, and therefore feeding it more frequently, or even actually putting it to the breast every time it cries.

Air-swallowing is a further cause of vomiting and colic. This occurs in infants who feed too rapidly, and in breast-fed infants is sometimes associated with underfeeding; here it results from the child's sucking at an empty breast, and automatically swallowing air as it sucks.

In regard to *organic disease,* these two symptoms are notably present in pyloric stenosis. They occur sometimes also in pyelitis, and in intussusception colic is of course an outstanding symptom. In such organic diseases one naturally finds, besides these important symptoms, the other symptoms and the physical signs typical of the disease in question. So far as pyloric stenosis is concerned, a degree of gastritis almost always exists, and stomach washing should be used for a few days prior to operation if such a procedure is decided upon; it also forms an important part of medical treatment. Owing to persistent vomiting these infants suffer from varying degrees of alkalosis, and therefore the stomach should be always washed out with saline and *not* with sodium bicarbonate solution. Pyelitis in infants should be treated by the use of alkalis in sufficient dosage to keep the urine alkaline throughout the whole 24 hours.

The treatment of intussusception is surgical, and operation should be carried out as soon as possible after the diagnosis has been established.

DYSPHAGIA

(MR. STANFORD CADE)

I AM concerned in this lecture with some practical considerations of the common conditions producing dysphagia. From an academic point of view it is no doubt interesting to argue whether some case of difficulty in swallowing is due to spasm of a sphincter or to failure of relaxation of the same sphincter; from the practical point of view it matters chiefly to discover whether the difficulty in swallowing is due to a malignant growth or to some other cause. The only way of differentiating the various cases is by submitting them all to a complete investigation at the earliest possible moment. Age, sex, mode of onset should not be used as an excuse to postpone investigation. In cases of dysphagia there is no justification for "expectant" treatment. The erroneous impression gained from the literature that dysphagia is not uncommonly due to spasm, aneurysm, cicatricial contraction, or diverticula is due to the fact that such cases are often reported, being interesting and presenting some special feature. In reality they do not account for more than 6 to 8 per cent. of all cases, the vast majority being due to a malignant growth. This being the case it is of the greatest importance not to delay diagnosis.

A systematic investigation should consist of the following steps :—

1. *History of the case.*—This should be taken in detail; it will throw a great deal of light on the case. Direct inquiry should be made for trauma, foreign bodies, burns. A statement by the patient that dysphagia has been present for years, that it is intermittent, that it occurred often under emotional strain or with certain foods only should not be allowed to detract attention from the graver possibilities and must not encourage the practitioner to prescribe belladonna and hope for the best. It must be remembered that a long history of slight or intermittent dysphagia does not infrequently precede the development of a neoplasm and that the "text-book picture" of fairly rapid and relentlessly progressive difficulty in swallowing is not always obtained. With equal caution must be received the statement that dysphagia occurred as "a bolt from the blue" in the middle of a meal and the first indication was sudden but complete and temporary inability to swallow. Direct inquiry should be made about: (*a*) vomiting, its quality, quantity, and relation to swallowing; (*b*) increased salivation and presence of mucus in the throat; (*c*) occasional streaks of blood in the sputum; (*d*) change of voice, however slight.

A carefully obtained history often helps to establish a diagnosis of the rarer causes of dysphagia, but it must never be forgotten that by far the commonest cause is a malignant growth somewhere between the pharynx and the cardia and deliberate search is to be made for it.

2. *Clinical examination* should consist in a systematic examination of the mouth, pharynx, and larynx. The lateral walls of the pharynx, the pyriform fossæ, and upper aperture of the larynx should be scrutinised. A pool of mucus behind the arytenoids, or frothy saliva in one pyriform fossa should arouse the gravest suspicion. The presence of œdema or an ulcer make the diagnosis nearly a certainty. A routine examination of the neck, chest, and abdomen should always follow. And lastly, the patient should be given a tumbler of water and swallowing observed.

The accidental discovery of an unsuspected lesion elsewhere should not deter one from a complete examination. The greatest injustice to the patient is a diagnosis of "functional" dysphagia without the fullest possible examination.

3. *X ray examination* should consist of: (*a*) A preliminary skiagraphy of the chest with special attention to the mediastinum. (*b*) Screening of the œsophagus with an opaque meal of fluid, semisolid and thick barium. The clinician interested in the welfare of his patient will be present at this examination. The meal should be visualised from the mouth down to the stomach both in the antero-posterior and oblique positions. (*c*) Films should be taken as they may reveal beyond the actual narrowing of the lumen of the œsophagus, extramural extension of the disease, its size and position.

4. *Œsophagoscopy.*—In careful hands this is a minor procedure. It should never be omitted; it should follow and not precede X ray examination, and it can give details of the type, size, and extent of the lesion unobtainable by other methods of examination.

The three following points require emphasis: (*a*) Bougies are dangerous and of doubtful usefulness, and should never be used unless under direct vision through the œsophagoscope. (*b*) A positive Wassermann reaction does not signify that the patient is free from all other diseases and time must not be wasted in protracted antisyphilitic treatment. (*c*) A negative result of a biopsy is of little value and should not outweigh clinical evidence.

Success or failure of treatment depends upon early diagnosis. If the lesion is benign, appropriate surgical treatment gives satisfactory results. Early diagnosis offers the only hope in malignant cases. The pharynx offers possibilities for the exercise of surgical skill in a minority of cases. Radiation by radium or X rays is applicable to a larger group of cases and by modern methods has given encouraging results. The œsophagus is still the realm of experimental surgery and for all practical purposes beyond the range of successful radiation.

THE SERVICES

ARMY MEDICAL SERVICES

Col. H. R. Bateman, late R.A.M.C., having attained the age for retirement, is placed on retd. pay.

Lt.-Col. J. P. Lynch, from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Maj. J. W. Lane to be Lt.-Col.

TERRITORIAL ARMY

Lt. G. Lyon-Smith to be Capt.

F. A. Edwards (late Cadet Serjt., Dulwich Coll. Contgt., Jun. Div., O.T.C.) to be Lt.

L. F. O'Shaughnessy to be Lt.

Supernumerary for service with O.T.C.—Lt. S. Andrews to be Capt. supern., for serv. with Med. Unit, Queen's Univ., Belfast Contgt., Sen. Div., O.T.C.

INDIAN MEDICAL SERVICE

Lt.-Col. R. T. Wells retires.

Lt. P. L. O'Neill to be Capt.

Lt. F. W. Whiteman is restd. to the estabmt.

ROYAL AIR FORCE

Flying Officer J. F. Sandow is granted a permanent commission in this rank.

MEDICINE IN THE DEFENCE SERVICES

THE Committee set up by the Government in 1931, under the chairmanship of Sir Warren Fisher, to investigate the causes of the shortage of officers and nurses in the medical and dental branches of the Navy, Army, and Air Force medical services, issued their report at the end of last July (see THE LANCET, August 5th, 1933, p. 298). The general conclusions of the report pointed to the necessity for improving the medical career in these services materially, and the Committee were assisted to their conclusions by all the Government departments concerned, by many responsible officials, by evidence from the medical schools, and by representation from the British Medical Association.

The Naval and Military Committee of the Association have now made a series of statements upon the Warren Fisher report, and these appeared as a supplement to the *Brit. Med. Jour.* last week. This has been done in response to an instruction from the Representative Body to the Council of the Association that the Council should consider the report and the action of the Government arising thereout, and that, if such action should appear unsatisfactory, the Council should be "given full authority to advise members of the profession seriously to consider the disadvantages to which they are liable if they accept service." The statements of the Naval and Military Committee have been forwarded as a memorandum to the Admiralty, the War Office, and the Air Ministry, and the Council of the Association propose to define the attitude of the Association in the light of the replies received.

With regard to all three Services the statements are arranged upon the same plan and are often verbatim similar. The Committee agree with the reduction of the establishment in the Naval Medical Service to meet present requirements, but point out that an adequate number of supernumerary medical officers will be necessary to relieve established officers; they recommend such officers to be attached to flag-ships as substitutes for medical officers serving with the fleets. In regard to the Army and the Air Force the reductions are viewed with apprehension. The Committee welcome the proposals for up-grading in all three Services and with regard to pay, hold that the minimum rate should be that which existed before the 3 per cent. reduction at the time of the national emergency, and find that the possibility of further reductions of pay is a constant grievance to the serving officers and a strong deterrent to recruiting.

Two paragraphs in the Warren Fisher report dealing with lack of economic attraction are adversely commented upon in respect of all three Services in practically the same words. They are as follows:—

> (Par. 22): "In examining the financial value of the career it is not sufficient to consider the scale of emoluments; it is necessary to take into account the length of the career, the average ages at which promotion takes place, and the proportion of officers that can be promoted from rank to rank. The financial value of the career is a function of all these factors and in order to estimate the economic attraction of the career, account must further be taken of factors which cannot be precisely expressed in terms of money, namely, amenities of location and accommodation, frequency of moves, and the liability of an officer to be separated from his family."
>
> (Par. 23): "The age of entry into the three Services is taken to be 25. Promotion is automatic after a special number of years service so far as the rank of Commander in the Navy, Major in the Army, and Squadron-Leader in the Air Force; above those ranks it is by selection within establishment. Assuming a rate of wastage (i.e., of premature exit from all causes) of 4 per cent. per annum, a figure based upon the Admiralty's experience, the establishments of the services as at present organised would in normal circumstances—present conditions are in many ways abnormal—allow of promotion as follows: (Tabular statement here shows ages of promotion and proportion of officers promoted.)

Upon these paragraphs the statements by the Naval and Military Committee, in the form of a note, are as follows, with certain alterations in phraseology to fit the particular Service alluded to:—

> "The financial value of the career, based upon the ages at which the average man may expect to secure promotion, is estimated in the Warren Fisher Committee's report on the assumption of a certain rate of wastage—4 per cent. This rate depends, to some extent, on the degree of satisfaction with which the terms and conditions of service are viewed by serving officers. The present rate of 4 per cent. results, over a period of years, in a high total wastage, and the statement that 44 per cent. of surgeon-commanders are promoted to be surgeon-captains is apt to be misunderstood unless it is realised, as it is stated later in para. 23, that the 44 per cent. mentioned is of surgeon-commanders still in the Service and eligible for promotion—that is, 44 per cent. of 7½ per cent., which is understood to be the percentage of entrants remaining at this stage. Stated as a proportion of entrants, this figure would be approximately 3½ per cent.
>
> "As these calculations are based on accumulated wastage, so the Committee's estimate of ages and promotion and proportion promoted under the complete scheme envisaged by the Warren Fisher Committee is based on the existing rate of wastage. Should the rate of wastage decline—and this might be held to be one of the objects of the Committee's proposals—then the basis of the calculations will be seriously affected, and the estimate that 75 per cent. of surgeon-commanders, serving and available, will be promoted to be surgeon-captains may be undermined. The present statement that 44 per cent. of officers reach the rank of surgeon-captain means that approximately 3½ per cent. of *entrants* reach this rank. The statement that 75 per cent. of officers will reach the rank of surgeon-captain means that approximately 5 per cent. of entrants will reach the rank of surgeon-captain (at the same rate of wastage). Any decrease in the rate of wastage will lower both these percentages."

With regard to all three Services the short-service system, though its power of attraction is acknowledged, is condemned.

Royal Army Medical Corps.—In regard to this Service the Committee welcomes the proposals to increase the number of posts carrying specialist emoluments, but on the subject of charge pay it is pointed out that the duties of the medical officer are preventive as well as curative and that to estimate charge pay in proportion to the sick persons under the officer's care is a misconception of his functions. The Committee emphasises strongly the view that the maximum rates of retired pay to be earned by officers of the rank of Major, Lieut.-Colonel, and Colonel are inadequate, while they affirm the opinion expressed by the Association before the Warren Fisher Committee that the head of the Medical Services should have a seat on the Army Council. The Committee criticises the statement of the Warren Fisher Committee as to the annual cost by the medical services of the Army, believing the figures to have been arrived at by including under this heading expenses which should have been set down elsewhere.

The statement with regard to the Royal Army Medical Corps ends with the following note on the application of the proposals of the Warren Fisher Committee to existing officers:—

> "The increase in the number of lieut.-colonelcies, if immediately adopted, will do a good deal to remedy the grievance of the large number of majors awaiting

promotion, but the Committee reaffirms its belief that the proper solution of the problem lies in promotion to the rank of lieut.-colonel on a 'years of service' basis, or alternatively that majors of 22 years' service and selected for promotion should receive the pay and retired pay of a lieut.-colonel whether actually promoted or not. The rate and method of application of the proposals of the Warren Fisher Committee to existing officers is of vital importance to the Service, and it is considered that they should be determined—and the application commenced—with the least possible delay."

Royal Air Force Medical Service.—In regard to this Service the Naval and Military Committee, while welcoming the proposals for upgrading and lengthening the career, ask for a definition from the Air Ministry of the specialisation found necessary in the Service.

HONORARY SURGEON TO THE KING

Maj.-Gen. J. F. Martin, C.M.G., C.B.E., late R.A.M.C., V.H.S., has been appointed Hon. Surgeon to The King, vice Maj.-Gen. W. H. S. Nickerson, V.C., C.B., C.M.G., late R.A.M.C., who has retired.

SPECIAL ARTICLES

PROTECTION FROM X RAYS AND RADIUM

IN June, 1932, it was announced that the X Ray and Radium Protection Committee was making an inquiry into the blood changes occurring in workers in radiological departments. A questionnaire was issued to hospitals, the authorities being asked to state how many workers in the X ray or radiological departments were being subjected to periodic blood examinations, and in how many of these, if any, alterations of the blood had been found. They were asked to supply also details of the workers' occupation, duration of service, and results of treatment. Sir Humphry Rolleston, chairman of the Committee, had previously[1] drawn attention to the conflicting observations made in blood changes following irradiation, which it was hoped the evidence to be collected would help to resolve. The brevity of the Committee's report (set out below) on the data submitted suggests that it was not adequate for this purpose, and the Committee has confined itself to emphasising the desirability of excluding from contact with radium and X rays persons with a leucopenia and of keeping a watch on the blood counts of workers in radiological departments.

The Committee's Report

At a recent meeting of the X Ray and Radium Protection Committee, presided over by the chairman, Sir Humphry Rolleston, it was decided, in view of fresh evidence available, to reaffirm the attitude of the Committee upon the necessity or otherwise of periodic blood counts on those engaged in radiological work. Particular importance centres round this matter, for if on the one hand the performance of these blood counts means a burden on hospital departments, from which they would welcome relief, yet on the other hand it is now generally acknowledged that changes in the blood picture due to radiation are recognisable long before any serious damage is likely to have been caused. It is in fact a danger signal, the indications of which cannot lightly be disregarded.

RECOMMENDATIONS

1. No person should be employed as an X ray or radium worker whose blood (as tested by a complete blood count) or general health is unsatisfactory.
2. Before beginning work or training, the normal leucocyte level should be found. If none of the total counts reach 6000 per c.mm. and none of the lymphocyte counts reach 1200 per c.mm., the service of the worker should not be accepted.
3. Periodical total and differential blood counts of the worker should be made during the morning period, every 6 months in the case of the X ray worker and every 3 months in the case of the radium worker. (*With regard to this recommendation the Committee suggest that the six-month period may be considerably extended in the case of X ray workers in departments which otherwise comply with the recommendations of the Committee.*)
4. If then there is found to be a decided and sustained drop in the total leucocyte or lymphocyte count the worker should cease work and be placed under treatment for an adequate period. On resumption of work every care should be taken and the circumstances of the work should be reviewed so as to prevent a recurrence.

APPENDIX TO THE REPORT

It is not possible to lay down hard-and-fast rules for the detection of what may or may not be considered a pathological change in the blood, owing to the physiological alteration of the number of the cells which is always taking place. A leucopenia is the first blood change to occur in X ray and radium workers. In order to detect this change at an early stage, it is necessary to take into account the following facts with regard to the leucocyte content of the blood of normal persons. A leucocyte tide occurs twice daily in all healthy individuals; that which occurs in the day time is low in the morning and high in the afternoon, particularly between 3 and 4. The differences between morning and afternoon counts are not infrequently twofold. Superimposed on this are minor fluctuations which can be detected at short intervals of time—e.g., minutes. Furthermore, when counts are made over long periods of time, such as a month, then the variations of the total leucocyte may be as wide as fourfold. It is to be noted that the polymorphonuclear cells play the dominant part in all these variations, and that the different varieties of white cells vary independently. In face of these wide variations, the leucocyte level of an individual can only be determined on the basis of a number of counts. Three afternoon counts on the X ray and radium worker should be made before beginning his work or training. Afternoon counts should be chosen, since the afternoon rise in the numbers of white cells is less pronounced in leucopenia than normally. A mild leucopenia can thus be detected without difficulty. When the subsequent routine counts are made, a single afternoon count, if satisfactory, is sufficient. If on the other hand it is decidedly lower than the level normal to the individual, and this is confirmed by two further afternoon counts, then a full investigation of the case is essential.

This report reaches us signed by the honorary secretaries, Dr. Stanley Melville and Prof. Sidney Russ.

It will be noticed that there is a discrepancy in detail between Recommendation 3 and the appendix, in respect of the time (morning or afternoon) at which blood counts should be performed.

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[1] Quart. Jour. Med., 1930–31, xxiv., 101.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EDINBURGH UNIVERSITY

THE celebration of the 350th year of the University has reminded Scotland that, in the founding of the "Tounis College," Edinburgh Town Council has a unique place in Scottish history. At the reception by Lord Provost Thomson and the Lady Provost, over 1000 guests filed past. The Lord Provost sketched the growth upwards of the university from "two classes with one master in 1583" to its present position with 4000 students—men and women—in 1933. Sir James Barrie, the chancellor, created the atmosphere always associated with his character. This was most obvious when Miss Frances Helen Simson, M.A., the first woman graduate of the university, came forward to receive her honorary degree. The chancellor assisted her on to the dais and, after the promoter had sketched her distinctions and the capping ceremony had been performed, led her on his arm back to her seat far down the aisle. Sir James Crichton-Browne, the doyen among Edinburgh medical graduates, had a great reception. He went to the university when he was 17 and he is now 92. He sprang alertly to his name and walked up with a swing to be received with both hands by the chancellor, who, as a former pupil of Dumfries Academy, was an old friend.

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IRELAND

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promotion, but the Committee reaffirms its belief that the proper solution of the problem lies in promotion to the rank of lieut.-colonel on a 'years of service' basis, or alternatively that majors of 22 years' service and selected for promotion should receive the pay and retired pay of a lieut.-colonel whether actually promoted or not. The rate and method of application of the proposals of the Warren Fisher Committee to existing officers is of vital importance to the Service, and it is considered that they should be determined—and the application commenced—with the least possible delay."

Royal Air Force Medical Service.—In regard to this Service the Naval and Military Committee, while welcoming the proposals for upgrading and lengthening the career, ask for a definition from the Air Ministry of the specialisation found necessary in the Service.

HONORARY SURGEON TO THE KING

Maj.-Gen. J. F. Martin, C.M.G., C.B.E., late R.A.M.C., V.H.S., has been appointed Hon. Surgeon to The King, vice Maj.-Gen. W. H. S. Nickerson, V.C., C.B., C.M.G., late R.A.M.C., who has retired.

SPECIAL ARTICLES

PROTECTION FROM X RAYS AND RADIUM

IN June, 1932, it was announced that the X Ray and Radium Protection Committee was making an inquiry into the blood changes occurring in workers in radiological departments. A questionnaire was issued to hospitals, the authorities being asked to state how many workers in the X ray or radiological departments were being subjected to periodic blood examinations, and in how many of these, if any, alterations of the blood had been found. They were asked to supply also details of the workers' occupation, duration of service, and results of treatment. Sir Humphry Rolleston, chairman of the Committee, had previously[1] drawn attention to the conflicting observations made in blood changes following irradiation, which it was hoped the evidence to be collected would help to resolve. The brevity of the Committee's report (set out below) on the data submitted suggests that it was not adequate for this purpose, and the Committee has confined itself to emphasising the desirability of excluding from contact with radium and X rays persons with a leucopenia and of keeping a watch on the blood counts of workers in radiological departments.

The Committee's Report

At a recent meeting of the X Ray and Radium Protection Committee, presided over by the chairman, Sir Humphry Rolleston, it was decided, in view of fresh evidence available, to reaffirm the attitude of the Committee upon the necessity or otherwise of periodic blood counts on those engaged in radiological work. Particular importance centres round this matter, for if on the one hand the performance of these blood counts means a burden on hospital departments, from which they would welcome relief, yet on the other hand it is now generally acknowledged that changes in the blood picture due to radiation are recognisable long before any serious damage is likely to have been caused. It is in fact a danger signal, the indications of which cannot lightly be disregarded.

RECOMMENDATIONS

1. No person should be employed as an X ray or radium worker whose blood (as tested by a complete blood count) or general health is unsatisfactory.

2. Before beginning work or training, the normal leucocyte level should be found. If none of the total counts reach 6000 per c.mm. and none of the lymphocyte counts reach 1200 per c.mm., the service of the worker should not be accepted.

3. Periodical total and differential blood counts of the worker should be made during the morning period, every 6 months in the case of the X ray worker and every 3 months in the case of the radium worker. (With regard to this recommendation the Committee suggest that the six-month period may be considerably extended in the case of X ray workers in departments which otherwise comply with the recommendations of the Committee.)

4. If then there is found to be a decided and sustained drop in the total leucocyte or lymphocyte count the worker should cease work and be placed under treatment for an adequate period. On resumption of work every care should be taken and the circumstances of the work should be reviewed so as to prevent a recurrence.

APPENDIX TO THE REPORT

It is not possible to lay down hard-and-fast rules for the detection of what may or may not be considered a pathological change in the blood, owing to the physiological alteration of the number of the cells which is always taking place. A leucopenia is the first blood change to occur in X ray and radium workers. In order to detect this change at an early stage, it is necessary to take into account the following facts with regard to the leucocyte content of the blood of normal persons. A leucocyte tide occurs twice daily in all healthy individuals; that which occurs in the day time is low in the morning and high in the afternoon, particularly between 3 and 4. The differences between morning and afternoon counts are not infrequently twofold. Superimposed on this are minor fluctuations which can be detected at short intervals of time—e.g., minutes. Furthermore, when counts are made over long periods of time, such as a month, then the variations of the total leucocyte may be as wide as fourfold. It is to be noted that the polymorphonuclear cells play the dominant part in all these variations, and that the different varieties of white cells vary independently. In face of these wide variations, the leucocyte level of an individual can only be determined on the basis of a number of counts. Three afternoon counts on the X ray and radium worker should be made before beginning his work or training. Afternoon counts should be chosen, since the afternoon rise in the numbers of white cells is less pronounced in leucopenia than normally. A mild leucopenia can thus be detected without difficulty. When the subsequent routine counts are made, a single afternoon count, if satisfactory, is sufficient. If on the other hand it is decidedly lower than the level normal to the individual, and this is confirmed by two further afternoon counts, then a full investigation of the case is essential.

This report reaches us signed by the honorary secretaries, Dr. Stanley Melville and Prof. Sidney Russ.

It will be noticed that there is a discrepancy in detail between Recommendation 3 and the appendix, in respect of the time (morning or afternoon) at which blood counts should be performed.

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[1] Quart. Jour. Med., 1930–31, xxiv., 101.

SCOTLAND

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THE LONDON MEDICAL EXHIBITION

(Concluded from p. 1007)

Food and Drinks

(93) Bovril, Ltd. (148–166, Old-street, E.C.), reminded practitioners of their well-known beef extract in its various forms.—(84) Brand and Co., Ltd. (Mayfair Works, Vauxhall, S.W.), showed their invalid food specialties, including meat juice, beef and chicken essences, and calves' foot jelly; also Peptamalt, a highly concentrated, predigested, liquid food prepared from beef and barley malt.—(100, 101) Cadbury Bros., Ltd. (Bournville), displayed nourishing drinks and chocolates, and dispensed their Bourn-Vita to all comers, emphasising its high diastase value.—(36) Frank Cooper, Ltd. (Victoria Works, Oxford), showed their well-known series of preserves, including sugarless marmalade and jams for the diabetic; and chutney and walnut pastes.—(77–79) Cow and Gate, Ltd. (Guildford, Surrey), in addition to their well-known milk foods for infants, pointed out Allergilac, a food specially prepared for allergy in infancy by the elimination of lactalbumen, the denaturisation of the casein, and the suitable adjustment of the pH value; Prolac, a protein milk; and their new Natural Teat which demands from the baby a munching instead of a sucking action.—(115) Energen Foods Co., Ltd. (Willesden, N.W.), showed their various standard breads, biscuits, and cereal foods for obesity, indigestion, diabetes, and other conditions in which a special diet is desirable.—(8) Wm. Gaymer and Sons, Ltd. (Attleborough and London). This ever-popular stand dispensed cider to all comers.—(163) Granose Foods, Ltd. (Watford), displayed their crispbread biscuits for digestive troubles, and special bread and biscuits for diabetes and obesity.—(134) Heudebert Dietetic Products (124, Victoria-street, S.W.) showed their various diabetic and other dietetic products, especially their series of breads, which contain respectively 5 per cent., 20 per cent., and 35 per cent. of carbohydrates.—(108) Hovis, Ltd. (London), had an exhibit showing the processes of turning wheat into flour and the method of making their bread; they also drew attention to a new type of cheese biscuit.—(112) Ingram and Royle, Ltd., (45, Belvedere-road, S.E.), drew attention to the various waters for which they are agents, particularly Vichy, Hunyadi Janos, and Contrexéville-Pavillon.—(49) Keen, Robinson and Co., Ltd. (Carrow Works, Norwich), emphasised again the medicinal value of mustard, and showed their Almata synthetic food for infants and invalids, and Robinson's Patent Barley and Groats.—(68, 69) Nestlé and Anglo-Swiss Condensed Milk Co. (6–8, Eastcheap, E.C.), in addition to their condensed milk and milk food, showed Lactogen, a scientifically prepared full-cream cow's milk with added cream and lactose.—(63) Peek, Frean and Co., Ltd. (Drummond-road, Bermondsey, S.E.), in addition to their Vita-Weat and biscuits, drew attention to Spiced Bran Fingers, the bran correcting constipation and the spices acting as a carminative.—(136) Sister Laura's Infant and Invalid Food Co., Ltd. (Springfield Works, Bishopbriggs, Glasgow), displayed their baby food and also Zomogen, a liquid restorative for anæmia and debility, especially recommended for backward children. They claim that it contains no metallic iron and does not irritate the stomach.—(126, 127, 128, 129, 130) Trufood, Ltd. (Creameries, Wrenbury, Cheshire), emphasised the value of their product, which is dehydrated by a special process which does not cook the fats or oxidise them.—(123) Virol, Ltd. (Hanger-lane, Ealing, W.), once again showed their well-known preparations Virol, Virol and Milk, and Virolax.—(80) Vitalia, Ltd. (11, Springfield, Upper Clapton, E.), showed their well-known meat juice preparation.—(85) Vitamins, Ltd. (23, Upper-mall, W.), drew attention to their Bemax preparation of vitamin B, and Bemax vitamin chocolate.

Books, Spas, and Miscellaneous

(21, 22) Baillière, Tindall and Cox (7 and 8, Henrietta-street, W.C.) specially drew attention to the following books: Rose and Carless' "Manual of Surgery," now in its 14th edition; "Minor Maladies and their Treatment," by Leonard Williams, in its 6th edition; "Endocrine Medicine," by William Engelbach (in 4 vols.); and "Diseases of the Skin," by R. W. Mackenna, in its 3rd edition.—(60) *Bath* was represented by a stand showing pictures of the various cures and amenities of the spa.—(52) Buxton had an exhibit to draw attention to the value of the waters, both bottled and drunk fresh in the town, and to the balneological facilities provided for patients.—(9) The Gas Light and Coke Co. (Horseferry-road, S.W.) illustrated an entirely new series of gas fires of the Portcullis type, which can be either let into the wall on the panel system, stood on the hearth, or moved about the room. The series included a wide range of attractive colours and stainless steel tiles.—(152) Harrogate's stand showed a cinema film of the many approved treatments available, and laid special emphasis on the natural sulphur and alkaline baths, and also the peat bath. The new Fango medicinal mud is being used successfully.—(20) William Heinemann (99, Great Russell-street, W.C.) had a large display of medical books, including the second editions of McDowall's "Science of Signs and Symptoms"; of Hewer and Sandes' "Introduction to the Study of the Nervous System"; and of Souttar's "Art of Surgery"; also the new life of Lettsom, by Johnston Abraham.—(67) Kolynos Incorporated (Chenies-street, W.C.), in addition to their older preparations, introduced Sylac, a perborate of soda, for keeping the teeth, gums, and mouth clean; it gives off nascent oxygen in water.—(32, 40, 41) H. K. Lewis and Co., Ltd. (136 and 140, Gower-street, W.C.), had their usual display of furniture for the doctor's consulting-room—roll-top desks, mahogany cabinets and chairs; ledgers, notebooks of all kinds, and chromium name-plates. They also showed many medical books, including: "Recent Progress in Medicine and Surgery," by Sir John Collie; "A Short Practice of Surgery," by Hamilton Bailey; "Common Skin Diseases," by A. C. Roxburgh; "The Principles and Practice of Otology," by F. W. Watkyn-Thomas; and "Internal Derangements of the Knee-joint," by A. G. Timbrell Fisher—(19) The Medical Agency, Ltd. (Dudley House, Southampton-street, W.C.), emphasised the value to doctors of their continuous, day-and-night service for supplying reliable locum tenents, assistants, and dispensers. They also advise in the buying and selling of practices, and conduct all the business and negotiations for the doctors concerned. They audit books, arrange for loans, and mortgages, and effect all classes of insurance.—(161) The Medical Sickness, Annuity and Life Assurance Society, Ltd. (300, High Holborn, W.C.), had their usual stand to encourage practitioners to insure against sickness and accident; they were busy explaining the new National Health Insurance and B.M.A. pension and disability insurance scheme, which provides excellent benefits for the practitioner.—(76) The Medical Press and Circular (8, Henrietta-street, W.C.) drew attention to their quarterly symposiums, of which the latest is on Diseases of Children, published this week; and to their weekly series of articles on Modern Treatment and General Practice.—(72) National Ophthalmic Treatment Board (1, High-street, Marylebone, W.) had a stand to explain the service which they provide, in conjunction with the B.M.A., for persons of limited means. A patient can be sent to an ophthalmologist and have the necessary glasses at a scheduled inclusive charge, ranging from 15*s.* to 33*s.*—(25) Oxford University Press (Amen House, E.C.) displayed prominently, among their large selection of medical books, "Diseases of Infancy and Childhood," edited by Leonard Parsons and Seymour Barling and written by 46 authorities; Heald's "Injuries and Sport";

neth Walker's " Enlarged Prostate and Prostatic ruction "; and Clephan and Hills " Elementary dbook on Radium."—(153) THE PRACTITIONER , Bouverie-street, E.C.) had on view several heir valuable special numbers, including the ber issue on Modern Treatment, and a symposium Birth Control.—(98) JOHN WRIGHT AND SONS, . (Bristol), displayed the Medical Annual; the ex Series, of which Hutchison's Index of Treatment is an example, and their Synopsis series, which now includes medicine, surgery, midwifery, and physiology.

In the account of the exhibition in our issue of Oct. 21st mention was made of Vagotonine (Anglo-French Drug Co.). This is not, as stated, an extract of regulating hormones, but is said to be a natural pancreatic hormone having a regulatory action on the organo-vegetative system.

CORRESPONDENCE

DIET AND WEIGHT

To the Editor of THE LANCET

IR,—In your leading article of Oct. 14th occurs following statement: "We raise these questions to impugn in any degree Prof. Dodds's main tention, but only to enter a caveat against an ression which his remarks may have left that *any* n of obesity can be reduced by suitable application the principles he outlines. This is quite true of exogenous obesity commonly met with in middle-d persons, *but it is certainly not true of the endo-ous cases*—(our italics)."

Ve feel that this statement might be construed to firm that prevailing attitude of despair towards se unfortunates which Prof. Dodds has been at ne pains to dispel. The daily output of energy not fall below a certain minimal level, and if the rgy furnished by the diet does not exceed this el the subject must either lose flesh, sleep all day, eat his physician, or violate the law of the conservan of energy. The basal heat output has been found competent observers to fall within normal limits most "exogenous" and many "endogenous" ses of obesity. In a few of the latter rather low dings have been found, but even such exceptions pond to diets calculated in accordance with basal eds.[1] It is, of course, quite possible that a patient licted with "endogenous" obesity may respond re slowly to dietetic restriction than an exogenous se, for the additional energy dependent on diurnal tivity may be different in the two cases. A ducing diet may also be more irksome to a patient hose obesity is the result of pathological hunger an to an habitual over-eater.

Some of the prevailing confusion arises from the roneous assumption that loss of flesh and loss of eight are synonymous terms. Restriction of diet is ot always followed immediately by loss of weight nd L. H. Newburgh[2] has shown that in such cases e loss of fat is masked by retention of water. This etention of water is only a temporary phenomenon, ut it emphasises the need for perseverance. In the ame connection, it is possible that the apparent irtue of the Turkish bath in obesity may lie in emporary dehydration from sweating.

Admitting that the ultimate nature of obesity is in nany cases obscure, the fact remains that its successful eduction by dietetic restriction is conditioned simply y the fortitude of the patient.

We are, Sir, yours faithfully,
F. B. BYROM.
DONALD HUNTER.

London Hospital, Whitechapel,
E., Oct. 30th, 1933.

NASAL INFECTION IN THE PSYCHOSES

To the Editor of THE LANCET

SIR,—As a practitioner who for twenty years has bad opportunities of investigating the rôle of focal sepsis in the production of the psychoses I wish to add my contribution to this correspondence. So long ago as 1914 Sir W. Arbuthnot Lane removed at my request portions of intestine in cases of certifiable insanity. These patients are still alive and well, and have since operation remained in full mental health. The late Dr. Henry Cotton paid more than one visit to London to study the methods of laboratory overhaul adopted by some of us, and I had the pleasure of collaborating with Dr. Graves in introducing laboratory methods of investigation in his hospitals. In my own practice I have seen excellent results in many psychoses, some less, some more advanced, follow a systematic examination of the patient in the laboratory; teeth, tonsils, sinuses, intestinal and uterine mucosal surfaces have all contributed to these happy results. Since 1919 I have in a very large number of cases been able to confirm the late Ford Robertson's estimate of the definite neurotoxic power of certain members of the diphtheroid group. These are a common find in many psychoses, and I have treated these cases with satisfactory results by autogenous detoxicated vaccines of the diphtheroid isolated.

I am, Sir, yours faithfully,
A. WHITE ROBERTSON.

Welbeck-street, W., Oct. 28th, 1933.

PROBLEMS OF ASTHMA

To the Editor of THE LANCET

SIR,—In your report of the discussion on asthma at a recent meeting of the Paddington Medical Society, Dr. Swietochowski "observed that many male patients seemed to inherit asthma from their mothers, while females inherited it from their fathers." Investigating this statement in the light of my own figures, I find that in one consecutive series of 700 cases of asthma my figures are as follows. I will not be so bold as to say that a child inherits asthma from anybody, but of the males (352) in this series a history of asthma or hay-fever was present in 87 cases in the father and his immediate relatives and in exactly the same number (87) in the mother and her immediate blood relations. Of the females (348) an asthmatical history or one of hay-fever was present in 73 of the fathers' side and in 77 of the mothers' side. In another series of 400 cases of hay-fever a direct history of hay-fever in the actual parents was present in 16 fathers and 18 mothers of 211 males. In 189 females, 13 fathers and 14 mothers were affected themselves by hay-fever. In neither case do the figures lend support to Dr. Swietochowski's statement.

At the same discussion Prof. Millais Culpin is reported as saying, "Feather-sensitiveness might in some cases be due to the juvenile association of the smell of feathers with the witnessing of sexual intercourse between the parents." Now if 20 or more unknown proteins be applied by the scratch method or intradermally to the skin of these feather-sensitive people, reactions will be obtained to feathers without the patient in any way knowing the nature of the proteins which are being applied. Are we really asked to believe that the shock of the scenes described are sufficient to change the whole blood of the child and every cell in its body, so that forever afterwards it will be sensitive to feathers by the skin reactions—to say nothing of giving the Prausnitz-Küstner reaction after the blood has actually left its body. If it were not that feathers enter so largely into the bedroom furniture, no one, not even the psychoanalyst with all his special training in sexual matters, could have thought out so fantastic an explanation —or have they similar unpleasant explanations as to why people are sensitive to eggs and fish and pollen ?

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[1] Wilder, R. M., Smith, F. M., and Sandiford, I.: Ann. Internal Med. 1932, vi., 724.

[2] Jour. Amer. Med. Assoc., 1931, xcvii., 1659.

Enormous strides forward have been made in the treatment of asthma in the past few years. In every case the new work has tended to provide definite physical and biochemical explanations of phenomena that were formerly looked upon as fanciful and neurotic tendencies on the part of the patient. In my opinion there are better ways of treating patients sensitive to feathers than by giving them explanations which seem to some of us so far-fetched.

I am, Sir, yours faithfully,

London, W., Oct. 30th, 1933. FRANK COKE.

IMPACTED MOLAR TEETH

To the Editor of THE LANCET

SIR,—For the purposes of a lecture at the Royal College of Surgeons early next year I am collecting all the evidence relating to severe disturbances associated with either upper or lower impacted third molars, such as chronic infection, malignancy, cysts, fractures. May I appeal through your columns to readers who may have the notes of any such cases to send me a brief summary, accompanied if possible by skiagrams or tracings showing the position of the tooth concerned. I shall take care that all radiograms and other original records are returned to the sender.—I am, Sir, yours faithfully,

C. BOWDLER HENRY, M.R.C.S., L.D.S.Eng.,
Lecturer in Oral Surgery, Royal Dental
Oct. 30th, 1933. Hospital, Leicester-square, W.C.2.

HISTAMINE IN RHEUMATISM

To the Editor of THE LANCET

SIR,—I have read with much interest the report of work by Dr. Bisset and Mr. Woodmansey in your last issue (p. 1018) and I am in complete agreement with their findings, but would like to add a few words from my own experience. In my work on ionisation with histamine during the last few months I have found a considerable percentage of cases of unquestionable clinical identity in which there has been an immediate freedom from all pain, nor has any suspicion of pain returned in the part treated. Then come the large and remaining percentage of cases which fall within the limits of the Harrogate findings —namely, gradual and definite improvement. The authors do not record any failures; possibly their findings agree with mine in this matter, where so far, with careful selection, no case has failed to react in a satisfactory manner.

I early discarded the method of using an aqueous solution as a routine, except in treating whole extremities, for a preparation with a glycerin base for direct application to the skin, using pads soaked in a saline solution. The treatment, as at Harrogate, has been taken in conjunction with the routine course of baths, &c. May I take this opportunity of expressing my appreciation of the assistance I have received from Messrs. Hoffmann-La Roche, Ltd., who placed their preparations at my disposal for experimental purposes.—I am, Sir, yours faithfully,

F. SEVERNE MACKENNA.

Droitwich Spa, Oct. 30th, 1933.

OIL BEFORE SUNBATHING

To the Editor of THE LANCET

SIR,—As surgeon of a large cruising liner I should be glad if any of your readers can give me information about the application of oils before exposing the body to the sun's rays in tropical and subtropical regions. Some of the worst cases of sunburn I have been called upon to treat had used oil before sunbathing. Possibly some of these had been lured into false security by the use of oil and had therefore overdone their sunbath, but this does not seem to account for all cases. Since I have adopted the practice of issuing notices discouraging the use of oil the occurrence of sunburn has diminished. I should therefore be very interested to learn the views of others on this subject.

I am, Sir, yours faithfully,

J. C. B.

The Club House, Overseas League, Oct. 29th, 1933.

BEQUESTS TO MEDICAL CHARITIES

To the Editor of THE LANCET

SIR,—In reference to the scheme brought forward in your issue of Oct. 21st, which you kindly qualified as "a fine proposal," I enclose a model codicil for addition to the Will of testators who approve of the scheme.

I, A. B., of..do make and declare this to be a Codicil to my last Will, which Will bears date the..........day of.............................., 19......

I do hereby give and bequeath unto................................. the sum of.......................pounds free of legacy duty.

And in all other respects I confirm my said Will.

In witness whereof I hereunto set my hand this.......... day of...................................., in the year of our Lord one thousand nine hundred and.................................

A. B.

Signed by the said A. B., the Testator, as a Codicil to his Will, in the presence of us, present at the same time, who in his presence and in the presence of each other subscribed our names as Witnesses.	C. D., of.............................. ....(occupation) E. F., of.............................. .... (occupation).

The codicil should be kept with the Will. The witnesses need not be the same as the witnesses of the original Will. While the original scheme of course set no bounds to generosity, it mentioned the conditions under which the bequeathing of £100 to either of two charities by a testator would stimulate others to follow the example.

I am, Sir, yours faithfully,

Oct. 26th, 1933. BACKBENCHER.

HYSTERIA IN DOGS

REFERRING to the paragraph numbered (1) of Mr. H. D. Walston's letter, appearing in THE LANCET of Oct. 21st (p. 945), the Chief Veterinary Officer of the Ministry of Agriculture points out that since the year 1902 rabies has existed in this country outside quarantine stations only during the period from 1918 to 1922. The diagnosis of rabies, which is a disease scheduled under the Diseases of Animals Acts, rests with this Ministry, and no case is declared solely upon the symptoms shown by the suspected animal; a positive diagnosis in all cases is based upon the demonstration of Negri bodies or the result of inoculation.

OBITUARY

SIR ALEXANDER HOUSTON, M.B., F.R.S.

DIRECTOR OF WATER EXAMINATIONS, METROPOLITAN WATER BOARD

WE regret to announce the death of Sir Alexander Houston which occurred at Hampstead on Sunday last. In these columns quite recently we noted that the state of his health had obliged him to resign his post as director of water examinations to the Metropolitan Water Board as from the end of the present year.

SIR ALEXANDER HOUSTON

[Photograph by Russell

Alexander Cruikshank Houston was born in 1865, the eldest son of the late Surgeon-General John Houston. Educated at Merchiston Castle School and at the University of Edinburgh, he graduated as M.B., C.M. in 1889 and as D.Sc. in 1892, and in the course of his career was a prizeman in public health and medical jurisprudence. His connexion with water investigations, which has made his name famous, followed closely upon the termination of his university career, for as early as 1893 we find him employed in researches on behalf of the Local Government Board into the connexion between lead poisoning and moorland water-supplies. From that time forward his work with regard to water-supply and the questions of public health immediately related thereto became continuous. For the London County Council he made important researches on sewage disposal at Crossness and Barking, and in respect of certain developments of this work he reported on the bacteriological contamination of milk and of watercress beds. He acted as bacteriologist to the Royal Commission on Sewage, instituted in 1899, while in 1903 he was the expert in arbitration proceedings in connexion with the Metropolitan water-supply, and in 1905 was engaged as bacteriologist to the Lincoln Corporation during the epidemic of typhoid fever which fell upon the city in January of that year. This outbreak afforded a striking instance of a catastrophe resulting from the employment of contaminated sources, while relying upon filtration of the water to remove the risks. Houston made a valuable report to the Local Government Board upon the epidemic, and a systematic treatment of the whole water-supply of Lincoln with hypochlorite of soda was instituted pending alterations in the service. To this work Houston himself referred in one of his admirable reports to the Metropolitan Water Board as "the dawn of chlorination."

In 1905 the Metropolitan Water Board decided to establish a central laboratory to meet the provision of the Metropolitan Water Board Act, 1902, which placed upon the Board the express duty of making arrangements for "chemical and bacteriological examinations of, and experiments as to the condition of, the water to be supplied by them." The first holder of the office carrying these responsibilities was Houston, and for the following 28 years he discharged them with the energy and success which all know. Our readers will have gathered from the annual analyses of his reports in how many directions his researches solved problems relating to the protection of water-supply and the securing of its purity; and those who have read the actual documents will recall with pleasure the literary qualities and unforced humour with which Houston could tell the tale of his strenuous labours.

Outside his work for the Metropolitan Water Board Houston's advice was often sought; for example, he was lent as an expert both to Cairo and Ottawa in each of which cities water-supply problems presented themselves, and the public recognition of his services was well-merited. He was created K.B.E. in 1918 and C.V.O. in the following year, and in 1931 was elected F.R.S.

FRANCIS GRAHAM CROOKSHANK, M.D., F.R.C.P. Lond.

DR. CROOKSHANK

[Photograph by Elliott & Fry

Dr. F. G. Crookshank, whose death occurred at his house in Wimpole-street on Oct. 27th, was born at Wimbledon in 1873, and was educated at University College, London, receiving his medical training at University College Hospital. He was a distinguished student, graduated with the university scholarship and gold medal in medicine in 1895, and held the house appointments at his own hospital and at Brompton. Early in his career he was attracted by psychiatry and held for a time an appointment at the Northampton County Asylum, after which he practised in partnership at Barnes with charge of the local isolation hospital and police supervision. But by the time the war broke out he had turned definitely to clinical medicine and had secured appointments to the French Hospital and the Prince of Wales's General Hospital. During the war he served in France, holding among other appointments that of medical director of the English Military Hospital at Caen, where his knowledge of French and German was often of value to his colleagues and to patients and prisoners of all sorts. In 1918 he was one of the first to describe a series of cases with unusual cerebral symptoms, which were fitted later into the picture of lethargic encephalitis.

On return to civil practice he now manifested his curious literary ability. He had previously written and edited some medical essays, but from

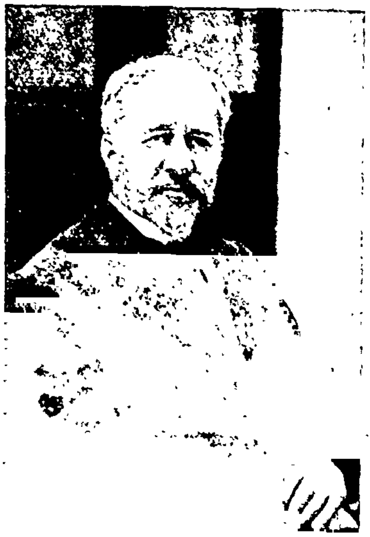
1920 onwards he discussed constantly the philosophic relations of medicine. His original outlook was evident in the remarkable book on influenza which appeared under his authorship in 1922, and his contributions to meetings, journals, and books became frequent; thus he contributed chapters to systematic works on psychology and psychotherapeutics, and supplied introductions to, among other books, Blondel's "Morbid Conscience," Wexberg's "Individual Psychology and Sex," and Adler's "Problems of Neurosis." In these introductions, as in the Bradshaw lecture delivered before the Royal College of Physicians of London in 1926, and entitled the Theory of Diagnosis, he displayed unusual erudition, and a subtlety of argument which more than occasionally defeated its own purpose, requiring for its comprehension, and not obtaining, a similar subtlety on the part of reader or audience. In argument consequently Crookshank was too ready to blame the other side for failures to perceive what he had failed to explain and, mainly for this reason he never obtained the recognition as a thinker which his attainments warranted and which were displayed in writings upon sexual problems, mongolism, spiritual healing, and many other topics, clinical and psychiatric.

Crookshank's book "The Mongol in Our Midst" demonstrated most clearly the originality of his mind. Behind his clear description of mongolism lay a strong plea for the recognition of a polygenetic origin of man, a view which though opposed by many anthropologists appears to be gaining ground, though not all of his advocacy is accepted. In recent years he became the disciple of Adler and was the leading propagandist of individual psychology in this country. When Adler was in England in 1925 he asked Crookshank to form a medical group in London in association with his own group in Vienna. Formed at first in association with the Adler Society, this developed three years later into the Medical Society of Individual Psychology, the remarkably rapid success of which may be attributed to Crookshank's energy and persuasiveness. He secured the presence of Adler himself and of Seif to lecture there and edited a series of pamphlets enforcing the value of individual psychology in medicine. By a tragic coincidence the last of these, entitled Individual Psychology and Nietzsche, appeared from his own pen shortly before his death; it is an exposition of his philosophy and attitude to life. Crookshank was seen at his best in the discussions at this society. His extraordinary readiness in debate, his skilful dialectic, aptness of quotation, and brilliance of illustration found full scope therein. It is by the freshness of his outlook and his vigorous though engaging methods of controversy that he will be best remembered.

ALBERT CALMETTE

LESS than a fortnight ago Prof. Calmette was busy in the laboratories of the new building in the Pasteur Institute, organising research, giving refugee German Jews an opportunity to continue their work, attending conferences, and acting as administrative head of the Pasteur Institute in the absence of Prof. Roux, to whose sick-bed he paid daily visits. As late as Oct. 24th he was present at the French National Congress of Hygiene at which he spoke. Soon afterwards he showed signs of peritonitis, and he died last Sunday morning.

Born in 1863, Calmette entered the medical service of the French navy at the early age of 20. He soon developed a taste for the then new science of bacteriology, and when in 1890 he came back to France he attached himself to Pasteur in Paris. His gifts did not escape Pasteur's notice, and in due course he was picked out to take charge of the institute at Saïgon, in French Indo-China. Here, in comparative isolation, he found that his first problem was a very high mortality from snake-bite. Behring's and Kitasato's work had shown how the effects of tetanus and diphtheria might be combated by a specific serum, and Calmette set himself to prepare a serum that would neutralise the snake toxin—a task in which he was to some extent successful. Another discovery at this stage of his career was of a low-grade mushroom capable of converting starch into sugar and alcohol. Its commercial exploitation by distillers provided him with funds which he devoted to his scientific work.



PROF. CALMETTE

On his return to France in 1895 Calmette was appointed director of the new Pasteur Institute in Lille and here he spent more than twenty years, happily combining his gifts for administration and for scientific research. He found for example that hookworm was responsible for much disease among miners in the north of France, and the principles laid down for his campaign against it remain valid to this day. Tuberculosis he studied from the beginning with the methodical and untiring perseverance which characterised his work. He was among the first to realise—what now seems obvious—that success in the campaign against it requires the recognition of the disease at an early stage. In 1901 he put this theory into practice by establishing the Emile Roux dispensary for its early diagnosis. At this centre working-class people were taught the elements of hygiene, and advice was given to patients who had to make the best of treatment at home.

In studying the prevention of tuberculosis Calmette came comparatively early to the conclusion that a living virus is more likely than a dead vaccine to confer durable immunity. This led to his investigation of bovine tubercle bacilli cultivated under conditions calculated to reduce their pathogenic properties to vanishing point, and in collaboration with Guérin he eventually prepared the now familiar vaccine, B C G. When the late war broke out, the work on B C G had already reached the stage of cattle vaccination. Then Lille was occupied by the Germans, and for the next few years Calmette, who remained in the city, had to abandon the systematic tests which he had planned. During the four years that followed, however, he found an outlet for his energies in the completion of his book on tuberculosis. a gigantic study in which he reviewed the researches of himself and other workers. At the same time, throughout the occupation, he was a pillar of support to his fellow-citizens who found in his calm courage and faith in the future just that help they needed. In 1917 he accepted the appointment of assistant director of the Pasteur Institute in Paris under Roux, but he did not leave Lille till after the war. At last he was free again to study the effect of B C G on animals.

When the time came for giving B C G to human beings, something more than vicarious courage was needed. If the experiment failed, if B C G resumed in the human body the qualities of the original culture and gave rise to fatal tuberculosis, the experimenters would find themselves in an invidious position. Two men took this risk deliberately, and between 1921 and 1924 Weill-Hallé and Turpin gave the vaccine, by mouth, to 321 new-born infants. Fortunately, there was no disaster. On the contrary, the infants throve, and the reports were so encouraging that in July, 1924, Calmette decided to put B C G at the disposal of doctors and midwives. The result has been that more than a million human beings have now been vaccinated with it. The experiment has been one of the largest of its kind, and in France, where most of the work has been done, there are few who doubt its success. The figures collected by the Pasteur Institute seem to show that the mortality among the B C G babies is much lower than that of others, but the case in favour of the vaccine cannot yet be regarded as statistically complete. During the last few years, moreover, the movement in favour of its general use has had an undeserved setback through the disaster at Lübeck in Germany. Some of the medical authorities of Lübeck, it will be recalled, wished to give B C G a trial, and obtained a consignment direct from the Pasteur Institute. Some time elapsed between the receipt of this consignment and the administration of some of it to numerous babies in the town. It will never be known exactly what happened in the laboratory where this consignment was kept, for soon after the infants who had been vaccinated began to fall ill and die, the remaining cultures were precipitately destroyed. From the subsequent investigation, however, it seems probable that a virulent culture of tubercle bacilli of the human type had, by a series of misunderstandings, been mixed in the laboratory in Lübeck with the harmless culture of B C G. Before this finding was reached there were endless opportunities for recrimination, but through the many phases of this distressing episode Calmette maintained his attitude of unflinching courtesy. Personal attacks were little to him in face of his concern lest a fault might be found in the vaccine on which he placed such splendid hopes.

PANEL AND CONTRACT PRACTICE

The Panel Conference and After

LAST month's conference will give the Insurance Acts Committee plenty to do in the coming year. It arrived at decisions often quite unexpected, without waste of words. There was in fact little sign of the usual queue of speakers anxious to address the meeting after a resolution had been proposed. This may be testimony to the way Dr. Dain, as chairman of the I.A.C., deals with the problems put up in resolutions by panel committees; at the banquet following the conference he described as easy meat the speakers who did not know the regulations on subjects about which they were talking. One committee, for instance, wished to make it compulsory on approved societies to inform the local insurance committee at once when they received notice of the marriage of an insured female. This is already in force, but the regulation fails when, as often happens, the insured person does not inform the society of her marriage. The resolution by Kent about "collective own arrangers" was the result of not putting into force existing regulations. Certain institutions are allowed to have one or more of their medical officers under contract with the local insurance committee, solely for the purpose of attending the resident staff. Sometimes it is the medical officer, more often the authority employing him, which receives the capitation fee less a percentage owing to the restrictive work. The institution or authority which engages the insured person makes it one of the conditions of service that he/she shall go on this doctor's panel list. The plan works quite well as long as the insured person remains in the institution, but apparently in the Kent area these persons often live out, and are therefore not within the terms of service of the medical officer of the institution on whose list they are. One of the resident staff may be sent home ill; who is then to attend the case and how is he to be paid for it? Temporary resident treatment does not apply because in the Kent cases the patients are at home. The emergency scheme does not apply; they are insured persons who have paid for their stamps and are therefore entitled to medical benefit. Kent complained that the institution doctor refused to attend them when outside the institution, and that in consequence the nearest insurance doctor was called in to do his work. This was, it seems, done without charge, but really the medical service subcommittee might have dealt with the situation under existing regulations. One of the most striking decisions of the conference was that deputies should be allowed to take the place of representatives of the local medical or panel committee on insurance committees. Although carried, on the motion of London, by quite a large majority, it is not likely to be accepted by the Ministry or by the approved societies.

Dispensing Ointment

At the last meeting of the insurance committee for London an hour was occupied in discussing a pharmaceutical service case in which an ointment had been dispensed in a reputed two-ounce chip box. The ointment had been weighed but apparently no account taken of the weight of the box, and there was a deficiency of grs. 77 out of grs. 960 ordered. The subcommittee had suggested failure to observe the terms of service but did not propose to withhold money. An amendment to censure and withhold money was eventually lost. The arguments for and against were various, and included an allegation that the chemist had deliberately supplied short weight. As a matter of fact the custom in dispensing ointment is just to fill the proper sized chip box. If the ointment is light the weight supplied will not be quite up to the amount ordered; if the ointment is heavy over-weight will be supplied. It should have appeared, even to laymen, almost impossible that there was any fraud in such a method. It is high time the Ministry and the pharmacists came to some agreement on the way to dispense ointments.

Dropping Out of Benefit

On Tuesday last Sir Hilton Young (Minister of Health) and Mr. Skelton (Under-Secretary of State for Scotland) received a deputation from the Federation Committee of the Associations of Insurance Committees in England, Scotland, and Wales. The object of the deputation was to bring to the attention of the Government the view of the committee that those persons who, in consequence of the provisions of the National Health Insurance Act, 1932, will cease to be entitled to medical benefit at the end of the present year, should be maintained in benefit by the aid of a special grant from the Exchequer. Mr. Marshall (Lanarkshire) said that the effects of the Act would be specially hardly felt in the depressed areas, in some of which 40 to 50 per cent. of the population were unemployed. He did not think that the Act would effect any substantial economy, inasmuch as medical assistance would have to be supplied by local authorities; the real question was whether the cost should be borne by the Exchequer or by the rates. Mr. Wright (Cheshire) said that the cost of maintaining in medical benefit those persons who would lose their title to it would be relatively small and would be only temporary if, through an improvement in trade, the persons concerned returned to insurance. Mr. Llewellyn-Jones referred especially to the serious position in Glamorgan where the poor-rate was already 8*s.* 5*d.* in the £. The Minister reminded the deputation that the health insurance fund had been threatened with serious financial difficulties. There were three possibilities: to increase contributions, to reduce benefits, or to provide an Exchequer grant. Increase of contributions was admitted by all to be impossible; an Exchequer grant would have meant the breakdown of the organisation as an insurance scheme. Extensions of benefit had been given to the persons concerned to the utmost possible limit, if benefits were to continue to bear any relation at all to contributions. There was no fear that insured persons who ceased to be entitled to medical benefit would lack proper medical attention under the arrangements made by public assistance committees. Mr. Skelton associated himself with what had been said by the Minister of Health

PUBLIC HEALTH SERVICES

Dysentery Bacilli as a Cause of Food Poisoning

DYSENTERY, often of mild type, is probably much more prevalent in this country than is commonly supposed. This was brought out by J. A. Charles and S. H. Warren,[1] and Dr. David Nabarro's work points in the same direction. It is only lately, however, that dysentery bacilli have been recognised as a cause of acute food poisoning. The distinction is somewhat artificial, since epidemic dysentery, if spread by food, is a form of food poisoning. What is under consideration are acute attacks of illness of food-poisoning type which are almost identical in clinical manifestations and epidemiological features with ordinary salmonella food-poisoning outbreaks. W. G. Savage and P. Bruce White [2] first drew attention to outbreaks of this nature due to dysentery bacilli, and amongst their 100 outbreaks are included four due to dysentery strains, one being of Flexner type, and three allied to, but not identical with, the Sonne strain. The symptoms in these outbreaks were those of acute food poisoning and not dysenteric. An outbreak described by R. E. Smith [3] is interesting because some of the cases were very acute in onset and rather of food-poisoning type. This epidemic was due to *B. dysenteriæ* Sonne.

The importance of the Sonne type in relation to food poisoning has again come into prominence in connexion with the recent outbreak of food poisoning in St. Pancras and Holborn (London) whose cause and course have now been ascertained in the face of considerable difficulties. The onset was on Oct. 7th, and so far as present information is available there were ten cases, with two deaths. The children who died were aged 11 and 13. The clinical symptoms were those ordinarily associated with food poisoning—namely, vomiting and acute abdominal pain—and there was also passage of blood and mucus in the stools and a high temperature in some cases. The vehicle of infection was pease pudding made from dried peas, boiled with some soda bicarbonate in a saucepan. Since the outbreak was limited to those who consumed a particular batch of pudding on Oct. 7th, and the same peas were used for earlier batches, the infection was something which affected that particular lot of pease pudding. Bacteriological examination of the dried peas yielded negative results, while, on the other hand, dysentery bacilli were found in large numbers in the pease pudding. The evidence at the inquest suggests that a little girl had been a carrier of the bacilli for some time, and that she was the probable source of infection. This child took some pease pudding and apparently dipped her fingers into it when taking it from the dish in which it was contained.

In salmonella food poisoning a chronic bacillus-carrier is exceedingly rarely implicated, but carriers of human dysentery bacilli are not uncommon. In this outbreak the strain responsible was *B. dysenteriæ* Sonne, and it is evident that this strain must be kept in mind as a possible causal agent in acute food-poisoning outbreaks. The presence of blood and mucus in the stools—features somewhat uncommon in salmonella food poisoning—is a useful pointer. An early provisional bacteriological diagnosis is of importance here, since the dysentery and salmonella types do not infest equally the same portions of the intestines, and if a dysentery strain is suspected special care must be taken to include the large as well as the small intestine in the portions selected for examination in post-mortem material. In specimens sent for examination dysentery bacilli may be overlooked unless the possibility of their presence is borne in mind.

London Milk

Last Tuesday's meeting of the London County Council endorsed an important report from its central public health committee on the milk-supply of London. Since 1907, when the examination of milk coming into London commenced, the proportion of samples containing tubercle bacilli has had its ups and downs; starting at 11·6 per cent., it dropped to 7·9 just before the war, and continued to fall in the earlier war period, with a sharp rise in 1917. It then fell again and for about a decade kept at a low level, the lowest point being in 1922, when only 2·6 per cent. of the milk examined was tubercle-infected. It rose again to 9·3 per cent. in 1932, taking churn milk only; or 10·9, including samples of tank milk. Forty per cent. of London's milk-supply now arrives in tanks, and an investigation was undertaken to see to what degree this tank milk is infected with tubercle bacilli. Of 18 tanks examined, 15 (83 per cent.) contained tubercle bacilli, and of these 15, 7 were positive to a test with 50 c.cm. of milk, 5 with 5 c.cm., and 3 with 0·5 c.cm. These figures are regarded as probably understating the actual infection. As it is impossible to say where a point is reached when the dilution of tuberculous milk is such that no danger to human life will result, it is necessary in the committee's view to regard all tuberculous milk as potentially dangerous. This high T.B. content applies only to the milk as it arrives in London, not to the milk as it reaches the consumer; for, of the ten companies which use tanks to bring milk into London, nine pasteurise the milk on arrival by the "holder" process, and the tenth sterilises it. The difficulty of tracing tuberculous milk to its source is almost insuperable under present conditions, when one tank may pool milk from 150 or more farms. The Milk and Dairies (Consolidation) Act of 1915 failed to take into consideration such a situation as this. Compulsory pasteurisation has been advocated in some quarters and opposed in others, but as 90 per cent. of ordinary London milk is at present commercially pasteurised—and the public can ensure obtaining pasteurised milk by asking for it from their dairymen —the L.C.C. does not regard the matter as yet ripe for local action. It would like, however, the appropriate Ministries to urge upon county councils the great importance of ensuring the provision of a milk-supply free from tubercle bacilli, and the Ministers themselves to consider what action should be taken to overcome the difficulties created by modern methods of milk transport.

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[1] THE LANCET, 1929, ii., 626.

[2] M.R.C., Special Report Series No. 92, 1925.

[3] THE LANCET, 1931, ii., 925.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 21st, 1933

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 4008; diphtheria, 1261; enteric fever, 40; acute pneumonia (primary or influenzal), 739; puerperal fever, 23; puerperal pyrexia, 112; cerebro-spinal fever, 17; acute poliomyelitis, 25; encephalitis lethargica, 11; dysentery, 13; ophthalmia neonatorum, 74. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 24th–25th was as follows: Small-pox, 5; scarlet fever, 3192; diphtheria, 1932; enteric fever, 33; measles, 381; whooping-cough, 150; puerperal fever, 26 mothers (plus 9 babies); encephalitis lethargica, 256; poliomyelitis, 7; "other diseases," 155. At St. Margaret's Hospital there were 13 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 3 (0) from enteric fever, 6 (0) from measles, 9 (1) from scarlet fever, 5 (3) from whooping-cough, 43 (7) from diphtheria, 99 (32) from diarrhœa and enteritis under two years, and 21 (6) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa, 14 occurred at Liverpool, 7 at Leeds, 6 at Sunderland, 4 at Hull, and 3 at Tottenham. Barnsley, Liverpool, and Northampton each reported one death from enteric fever. Six fatal cases of diphtheria occurred at Manchester, 4 at Coventry, 3 at Hull.

The number of stillbirths notified during the week was 238 (corresponding to a rate of 40 per 1000 total births), including 40 in London.

MEDICAL NEWS

Royal College of Physicians of London

At a meeting of the comitia of the College on Oct. 26th, Lord Dawson, the president, in the chair, Dr. F. H. Jacob, Sir Ewen Maclean, Sir Henry Dale, and Dr. F. R. Fraser were elected councillors. The following were elected representatives of the College: Dr. R. A. Young, as a member of the committee of management of the Conjoint Board; Dr. Comyns Berkeley, on the Central Midwives Board; and Dr. John Hay, on the court of governors of the University of Liverpool.

The president announced that Dr. E. H. R. Harries had been appointed Milroy lecturer for 1935, and that the Jenks memorial scholarship for 1933 had been awarded to Henry Newnham Peyton, late of Epsom College.

The following candidates, having satisfied the censor's board, were elected to the membership: Trevor Arthur Lloyd Davies, M.B. Lond; Sailendra Kumar Ghosh-Dastidar, M.B. Calcutta; Ronald Edward Jowett, M.D. Leeds; Patrick Corbett Mallam, M.D. Oxf.; Frederick Murgatroyd, M.D. Liverp.; Ralph Athelstane Noble, M.B. Sydney; Bangalore Venkata Subba Rao, M.B. Mysore; Hari Krishna Rustogi, M.B. Lucknow; William Edward Snell, M.D. Lond.; and Ian Oriel Thorburn, M.D. Melb.

Licences to practise were conferred upon 117 candidates (96 men and 21 women) who have passed the final examination of the Conjoint Board and have complied with the by-laws of the College. The following are the names and schools of the successful candidates:—

R. D. Ayyar, Madras; A. J. N. X. Babapulle, Ceylon and King's Coll.; Bridget M. Barcroft, Camb. and Royal Free; W. R. Billington, Camb. and Birmingham; G. W. Blomfield, Leeds; I. N. Blusger, Cape and St. Bart.'s; P. R. Boucher, St. Mary's; B. H. A. Bovet, Geneva and Guy's; Muriel Boycott and C. F. R. Briggs, Univ. Coll.; J. A. Brocklebank, Guy's; A. Brown, King's Coll.; G. C. Brown, Camb. and St. Mary's; R. E. Browne and J. A. C. Burridge, King's Coll.; K. L. Buxton, Camb. and St. Thomas's; W. H. Cartwright, T. L. Chester-Williams, and J. A. Chivers, St. Bart.'s; A. J. P. Coetzee, Edinburgh and London; K. R. D. Coles, Guy's; F. E. Corea, St. Bart.'s; C. F. Critchley, St. Thomas's; J. D. Cruickshank, Birmingham; Enid G. M. Cummings, Royal Free; D. O. Davies, St. Bart.'s; H. S. Davis, Camb. and Charing Cross; G. De Lacey, Cardiff and London; G. V. W. Doherty, Cape and Guy's; L. J. L. Edwards, St. Bart.'s; P. J. England and G. H. D. Evans, Cardiff; T. Fitt, Camb. and St. Thomas's; H. D. Fleming, St. Thomas's; H. C. Fletcher-Jones, Westminster; P. A. Forsyth, St. Thomas's; H. R. Fosbery, L.M.S.S.A., London and Middlesex; M. K. Gadgil, Bombay and West London; H. J. Gaudin, Otago; B. Gaunt, Birmingham; S. K. Ghosh, Patna and St. Bart.'s; Mary I. Gibson, Royal Free; H. W. Hall, Univ. Coll.; Susanna M. Halliday, Edinburgh; Ida M. Hamp, Royal Free; R. S. Handley, Camb. and Middlesex; H. G. Hanley, M.B., Liverp.; Beatrice J. Haram, Royal Free; N. H. Harwood-Yarred, Camb. and St. Thomas's; S. A. Hasan, Punjab; G. A. H. Herbert, London; C. A. Hodges, St. Thomas's; J. Holme, Manchester; A. C. L. Houlton, Camb. and St. Bart.'s; J. W. James, Univ. Coll.; Maisie F. James, Royal Free; R. G. James, King's Coll.; E. H. Johnson, Leeds; J. B. Jordaan, Cape and Guy's; J. S. Kapadia, Bombay and King's Coll.; Phyllis M. Kerridge, Univ. Coll.; Gwendoline D. Knight, Royal Free; Alfreda W. Krichauff, Adelaide and West London; E. H. P. Lassen, King's Coll.; J. B. Lee, Manchester; O. Lyth, Guy's; F. W. H. McMurdo, Birmingham; J. S. Marr, Aberdeen and London; K. R. Masani, Univ. Coll.; P. C. Matthew, Camb. and Univ. Coll.; S. A. Mian, Univ. Coll. and West London; C. B. Miller, King's Coll.; C. J. B. Murray, Middlesex; Frances C. Naish, Camb. and Royal Free; P. B. L. Nicholas, London; W. S. Nutt, Camb. and King's Coll.; Margaret M. O'Connor, Royal Free; V. G. Peckar, Univ. Coll.; G. D. Pirrie, Camb. and King's Coll.; Joyce A. Pope, Manchester and West London; Margaret R. Price, Royal Free; R. R. Race, St. Bart.'s; K. S. Ramaswami, Madras and Guy's; V. B. Reckitt, Guy's; L. R. J. Rinkel, Camb. and St. Thomas's; M. Ripka, London; Helen E. Rogerson, Manchester; Picotee E. Rose-Innes, Royal Free; J. E. Rowlands, Guy's; M. Sacks, Leeds; D. S. Saklatvala, Univ. Coll.; B. Samuel, Cardiff; P. R. Saville, London; B. Schulenburg, Cape Town; G. R. Sedleigh-Denfield and R. Shackman, St. Bart.'s; J. Shields, Camb. and St. Bart.'s; I. M. Shulman, St. Bart.'s; J. Smart, Camb. and St. Bart.'s; R. L. Soper, Guy's; M. S. Spink, Camb. and Guy's; Alice C. N. Swanston, Royal Free; M. M. Syddiq, Punjab; Barbara M. G. Taylor, Leeds and West London; H. W. Thomas, London; D. M. Thomson, St. Bart.'s; G. L. B. Thurston, Guy's; Lilian E. Tracey and Sarah C. B. Walker, Royal Free; T. P. Ward, Camb. and St. Thomas's; J. T. Watkins, Cardiff; C. P. B. Wells, Univ. Coll.; P. R. Wheatley, Guy's; F. E. Wheeler, St. Bart.'s; J. I. Wilson, Univ. Coll.; C. R. Wright, Liverpool; and I. Zieve, Guy's.

Diplomas in Public Health were conferred (jointly with the Royal College of Surgeons) upon the following 8 candidates:—

B. Haring, William Hartston, Mary C. im Thurn, M. Jafar, Lilian P. James, K. N. Mawson, G. P. Phadke, and V. V. Puri

University of Cambridge

The Smyth Exhibition, of an annual value of £30, is offered to an open scholar or exhibitioner of Corpus Christi College who intends to read for a medical degree. When funds permit a further Smyth exhibition may be offered to another undergraduate reading medicine.

University of London

At a meeting of the senate on Oct. 25th it was resolved that on the occasion of the celebration of foundation day, 1933, the honorary degree of doctor of science should be conferred, among others, on Sir Thomas Barlow, F.R.S., consulting physician to University College Hospital. The title of professor of malarial studies in the London School of Hygiene and Tropical Medicine was conferred on Sir Samuel Rickard Christophers, lately director of the Central Research Institute at Kasauli, who has been working at the School as Leverhulme research Fellow with a grant from the Medical Research Council; and the title of reader in pathology was conferred on Dr. F. A. Knott, assistant lecturer in bacteriology in Guy's Hospital medical school. Sir Ernest Graham-Little was re-elected chairman of the council for external students for the year 1933–34.

Society of Apothecaries of London

At recent examinations the following candidates were successful :—

Surgery.—G. C. Canaval, Univ. of Bristol ; E. E. Evans, Guy's Hosp. ; E. M. F. O'Donovan, Royal Free Hosp. ; and S. E. Roberts, Guy's Hosp.

Medicine.—K. W. Bruce, Univ. of Durham ; H. L. Canaval, Univ. of Bristol ; N. C. Lendon, St. Mary's Hosp. ; D. A. Smith, Univ. of Cambridge and St. Mary's Hosp. ; G. L. R. Tapsall, St. Mary's Hosp. ; P. D. Thomas, Univ. of Cambridge and St. George's Hosp. ; T. von Haebler, Royal Free Hosp. ; and J. P. Walsh Conway, Charing Cross Hosp.

Forensic Medicine.—G. C. Canaval, Univ. of Bristol ; R. F. Fleming, St. Mary's Hosp. ; E. M. F. O'Donovan, Royal Free Hosp. ; B. D. Sachdeva, Guy's Hosp. ; A. L. L. Silver, Univ. of Oxford and London Hosp. ; and J. P. Walsh Conway, Charing Cross Hosp.

Midwifery.—P. C. Alexander, Univ. of Oxford and Guy's Hosp. ; A. H. L. Baker, Univ. of Oxford and St. Mary's Hosp. ; G. W. Hardy, St. Mary's Hosp. ; W. C. Heunis, London Hosp. ; M. T. Hirst, King's Coll. Hosp. ; E. G. Houghton, Univ. of Cambridge and St. George's Hosp. ; D. P. King, Univ. of Cambridge and Guy's Hosp. ; S. Krishnan, Univ. of Sheffield ; H. J. Ripka, London Hosp. ; H. W. Smithies, St. Mary's Hosp. ; and P. H. Willcox, Univ. of Cambridge and St. Mary's Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery :—

K. W. Bruce, G. C. Canaval, R. F. Fleming, E. M. F. O'Donovan, P. D. Thomas, and T. von Haebler.

Aberdeen University Club, London

The ninetieth half-yearly dinner of this club will be held at the Trocadero Restaurant, Piccadilly, W., at 7 for 7.30 P.M., on Thursday, Nov. 23rd, under the chairmanship of Mrs. K. E. Trail. The secretary's address is 9, Addison-gardens, W.14.

Fellowship of Medicine and Post-Graduate Medical Association

Four lectures, arranged by the London Child Guidance Clinic, will be given on Nov. 13th, 15th, 20th, and 22nd, at B.M.A. House, Tavistock-square, London, W.C. The first, on child psychiatry and its bearing on behaviour, will be given by Dr. William Moodie (at 8.30 P.M.). An advanced course in urology will be given at St. Peter's Hospital for Stone from Nov. 6th to 18th, and during the week-end, Nov. 18th and 19th, there will be one in gynæcology at the Samaritan Hospital for Women. A fortnight's course in diseases of the chest will be held at the City of London Hospital, Victoria Park, from Nov. 13th to 25th, and a course in venereal disease at the London Lock Hospital from Nov. 13th to Dec. 9th. The subjects of other forthcoming courses include proctology at St. Mark's Hospital (Nov. 20th to 25th); rheumatism at the British Red Cross Clinic (Tuesdays and Thursdays from Nov. 21st to Dec. 7th); diseases of infants at the Infants Hospital (Nov. 27th to Dec. 9th); and dermatology at Blackfriars Skin Hospital (Nov. 27th to Dec. 9th). Further particulars may be had from the secretary of the Fellowship, 1, Wimpole-street, W.1.

St. Mary's Hospital Medical School

The King, accompanied by the Queen, will open the new medical school of St. Mary's Hospital, London, on Tuesday, Dec. 12th.

Industrial Health Research Board

The Medical Research Council have appointed Dr. E. P. Cathcart, F.R.S., regius professor of physiology in the University of Glasgow, to be chairman of this board in succession to Sir Arnold Wilson. They have also appointed Prof. Cyril Burt, D.Sc., and Miss Hilda Martindale to be members of the board in succession to Sir John Parsons, F.R.S., and Miss M. Ritson.

National Council for Mental Hygiene

The third biennial conference on mental health organised by this council, will open at the Caxton Hall, Westminster, with a meeting at 8.30 P.M. on Wednesday, Nov. 22nd. Prince George, the president, will take the chair. The address of the council is 78, Chandos House, Palmer-street, London, S.W.1.

Child-Study Society, London

Dr. J. Norman Glaister will take the chair at a meeting of this society, to be held at the society's new address, 29, Tavistock-square, W.C.1, at 6 P.M. on Thursday, Nov. 9th. Mrs. Marjorie Abbott will speak on Toys and the Child's Development.

Prof. Pauchet in Leeds

To-day, Friday, Nov. 3rd, at 5.30 P.M., Dr. Victor Pauchet, professor of surgery in the University of Paris, will address the University of Leeds Medical Society, and at 8.30 P.M. the Leeds and West Riding Medico-Chirurgical Society. Both meetings will be held in the General Infirmary.

College of Physicians of Philadelphia

Alvarenga Prize.—The next award of this prize, amounting to about 300 dollars, will be made on July 14th, 1934. Essays on any subject in medicine will be considered provided they have not appeared in print and have not been presented elsewhere in competition for a prize. They must be in prescribed form, and must be received by the secretary at 19, South 22nd-street, Philadelphia, by May 1st. The prize for 1933 was awarded to Dr. Harry Shay and Dr. J. Gershon Cohen, of Philadelphia, for their essay on experimental studies in gastric physiology in man.

Liverpool Dental Hospital

Owing to the large number of patients awaiting denture treatment, and the lack of money, equipment, and staff, the committee have for the time being closed the dental appliance department to new patients. The attendance of patients has increased so considerably that in September they exceeded 8000, an increase of 793 over the same month last year. More than 1100 patients are awaiting dentures, mostly double, and it will be impossible to complete their treatment in less than a year. It is officially stated that the chief cause of the congestion is the introduction of a system of payment by instalments. The charge for a set of teeth is £4, which may be paid for by instalments of 1*s.* 2*d.* weekly.

Jewish Health Organisation of Great Britain

This organisation has arranged a course of public lectures which will be given on Saturdays at 8.30 P.M., from Nov. 18th to Jan. 13th, in the Whitechapel Art Gallery, High-street, Whitechapel, London, E. The speakers will include Dr. Leonard Williams (digestion), Dr. D. H. Geffen (cleanliness and good citizenship), Dr. Lionel Goitein (minor neuroses and major consequences), Dr. Bertram Nissé (the nature, prevention, and treatment of rheumatism), Dr. Stella Churchill (the prevention of maternal mortality), Dr. A. R. Abelson (new methods in first-aid), Mr. Harold Kisch (the common cold), Dr. W. J. O'Donovan (occupational sickness and diseases), and Dr. Killick Millard (the problem of the slums). The address of the organisation is Woburn House, Upper Woburn-place, W.C. 1.

Medical Diary

Information to be included in this column should reach us n proper form on Tuesday, and cannot appear if it reaches s later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 7th.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Mr. C. Hope Carlton: 1–4. Fracture of the Os Calcis Treated by the Böhler Method. Mr. Ralph Brooke: 5. Pathological Fracture of the Humerus. 6. Pneumatic Splint for Treating Fractured Clavicles. Mr. R. Broomhead: 7. Lantern Slides of X Ray Photographs of a Case of Sacro-iliac Dislocation reduced by Hoke Traction. Mr. G. R. Girdlestone: 8. Radiograms of a Case of Calcification in the Semilunar Cartilages of the Knee. Mr. J. M. Gibson: 9–10. Arthritis of Hip for Diagnosis. Dr. A. Feiling: 11. Unilateral Spinal Arthritis with Compression of Nerve-roots. Mr. W. Eldon Tucker: 12. A Family with Congenital Absence of the Femoral Head. Other cases will be shown.

WEDNESDAY.—5 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Mr. W. Ernest Miles: Some Experiences in Rectal Surgery. (Presidental address.)

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Dr. Terence East: 1. Hæmolytic Anæmia with Acholuric Jaundice and Normal Erythrocyte Fragility time, treated by Splenectomy. Dr. Philip Ellman: 2. Generalised Bronchiolectasis with Bronchiectasis of the Left Base. Other cases will be shown. 8.30 P.M., OPHTHALMOLOGY. (Cases at 8 P.M.) Papers. Mr. A. C. Hudson: Metastatic Carcinoma of the Choroid. Miss Ida Mann: Demonstration of Congenital Abnormalities of the Iris and Lens. Cases will be shown.

HARVEIAN SOCIETY OF LONDON, Town Hall, Paddington green, W.

THURSDAY, Nov. 9th.—8.30 P.M., Prof. L. S. P. Davidson: Therapeutics of Anæmia.

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Wandsworth Common.

WEDNESDAY, Nov. 8th.—9 P.M., Dr. E. Ulysses Williams: Will an X Ray Examination be Helpful?

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Nov. 10th.—8.45 P.M., Mr. W. E. Tucker: Athletic Injuries Manipulation.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, W.

THURSDAY, Nov. 9th.—8.30 P.M., Dr. C. M. B. Brown: Relationship Between Psychology and General Medicine.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY, Royal Northern Hospital, Holloway-road, N.

THURSDAY, Nov. 9th.—9 P.M., Mr. W. B. Gabriel: Clinical Demonstration.

EUGENICS SOCIETY.

TUESDAY, Nov. 7th.—5.30 P.M. (in the Rooms of the Linnean Society, Burlington House, W.), Dr. H. L. Gordon: Amentia in the East African Native, Considered Psychiatrically and Socially.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, Nov. 7th and following THURSDAY.—5 P.M., Sir H. Rolleston: History of the Endocrine Organs. (FitzPatrick lectures.)

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, Nov. 6th.—5 P.M., Mr. R. Davies-Colley: Specimens illustrating Diseases of the Breast.

FRIDAY.—5 P.M., Mr. Davies-Colley: Specimens illustrating Fibrocystic Disease and Innocent Tumours of Bone.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 6th, to SATURDAY, Nov. 11th.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Evening M.R.C.P. Course. Tues. and Thurs., at 8 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Course in Medicine, Surgery, and Gynæcology. All day.—ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C. Course in Urology for advanced post-graduates. All day.—PANEL OF TEACHERS. Individual clinics in various branches of Medicine and Surgery are available daily by arrangement with the Fellowship of Medicine.—Courses, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Nov. 10th.—4 P.M., Mr. N. Asherson: Indications for Opening of the Mastoid.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL Post-graduate Lectures.

WEDNESDAY, Nov. 8th.—4 P.M., Mr. E. Rock Carling: Surgery of the Sympathetic System.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Nov. 8th.—4.30 P.M., Mr. C. H. Mills: Some Interesting Urological Cases with Demonstration, Pathological Specimens, and Radiograms.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Chandos-street, W.C.

SUNDAY, Nov. 5th.—10.30 A.M., Mr. C. Jennings Marshall: Common Disorders of Micturition. 11.45 A.M., Mr. R. A. Fitzsimons: Infections of the Hand.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Nov. 9th.—4.30 P.M., Dr. W. P. H. Sheldon: Prevention of Diseases in the Pre-School Age. 9 P.M., Mr. V. E. Negus: Cancer of the Larynx.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Nov. 6th.—3.30 P.M., Dr. Kinnier Wilson: Disorders of Cerebral Functions: Aphasia, Apraxia, &c.

TUESDAY.—3.30 P.M., Dr. Denny-Brown: Spinal Reflexes.

WEDNESDAY.—3.30 P.M., Dr. Collier: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Walshe: The Motor System.

FRIDAY.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses.

Out-patient Clinic each day at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Nov. 7th, and following THURSDAY.—5 P.M., Dr. J. E. M. Wigley: Tuberculosis Cutis.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Nov. 8th.—4 P.M., Dr. C. M. Wilson: Ketogenic Diet.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Nov. 8th.—3.30 P.M., Dr. T. Izod Bennett: Anæmia and Diet.

ROYAL INSTITUTE OF PUBLIC HEALTH, 23, Queen-square, W.C.

WEDNESDAY, Nov. 8th.—4 P.M., Dr. J. H. H. Williams: Citizenship and Tuberculosis.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Nov. 9th.—4.15 P.M., Mr. P. G. McEvedy: Mistakes in Diagnosis.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate, Manchester.

WEDNESDAY, Nov. 8th.—4.30 P.M., Mr. E. S. B. Hamilton: Dysphagia.

LEEDS GENERAL INFIRMARY.

TUESDAY, Nov. 7th.—4 P.M., Mr. H. W. Symons: Demonstration of Surgical Cases.

GLASGOW Post-graduate Lectures.

WEDNESDAY, Nov. 8th.—4.15 P.M. (at the Royal Infirmary), Dr. J. Henderson: Medical Cases.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Nov. 7th.—4.15 P.M., Mr. Wilson H. Hey: Hyper- and Hypo-thyroidism.

FRIDAY.—4.15 P.M., Mr. P. R. Wrigley: Demonstration of Surgical Cases.

Births, Marriages, and Deaths

BIRTHS

FORSTER.—On Oct. 23rd, at Jerusalem, the wife of Dr. E. D. Forster, Hebron, Palestine, of a daughter.

MARRIAGES

BALGARNIE—PATTISON.—On Oct. 23rd, Wilfred Balgarnie, O.B.E., F.R.C.S., of Hartley Wintney, to Ruby Ethel Pattison, of Hook, younger daughter of the late Captain Pattison, of the Eastern Telegraph Company.

DEATHS

BOOTH.—On Oct. 25th, as the result of a motor accident near Darlington, Lionel Hethorn Booth, M.R.C.S., L.R.C.P.

BRAY.—On Oct. 30th, Colonel George Arthur Theodore Bray, D.S.O., R.A.M.C. (retired).

GAIRDNER.—On Oct. 20th, at Ayr, after a brief illness, Eric Dalrymple Gairdner, D.S.O., M.B., Ch.B.

HOUSTON.—On Oct. 29th, at Fairhazel-gardens, Hampstead, Sir Alexander C. Houston, K.B.E., C.V.O., F.R.S., LL.D., M.B., D.Sc., Director of Water Examinations, Metropolitan Water Board.

HUTCHISON.—On Oct. 20th, while on a visit to Evesham, Worcestershire, Arthur Jaffray Hutchison, M.A., M.B., C.M.

IRELAND.—On Oct. 23rd, at a London nursing-home, John Stewart Algeo Ireland, B.A., M.B., B.Ch., T.C.D., aged 73 years.

KNIGHT.—On Oct. 29th, at Brighton, following an accident, Elizabeth Knight, M.B., of Gainsborough-gardens, Hampstead, N.W., aged 64 years.

NEWMAN.—On Oct. 24th, at Godalming, Arthur Joshua Newman, M.R.C.S., aged 81.

THOMPSON.—On Oct. 28th, suddenly, Dr. Arthur Henry Thompson, of Harley-street, W.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

PADDINGTON GREEN CHILDREN'S HOSPITAL.—Last week Lady Owen laid the foundation-stone of extensions to this institution, which include eight new bedrooms for nurses.

NOTES, COMMENTS, AND ABSTRACTS

CHANGES IN WOMEN THEMSELVES BETWEEN 1830 AND 1930 *

BY RAY STRACHEY

CHAIRMAN OF THE EMPLOYMENT COMMITTEE, LONDON AND NATIONAL SOCIETY FOR WOMEN'S SERVICE

WE are familiar with the idea of physical evolution. We know a lot about the disused parts of our bodies which we have developed away from. We sit without a thought upon our rudimentary tails, and in the physical world we no longer admit the idea that the human body will never change. Why should we not do the same for the human spirit? I grant you that the period of change may be very slow. If there is any kind of development in human nature going on it is probable that it will move along unevenly. There will be periods of stagnation and periods of activity; and if that is so no one can deny that, as regards the white races at least, the last hundred years are likely to have been a favourable time for female development and alteration; and if for females, then for the whole race.

THE RESULTS OF NEGLECT

I believe that one of the important reasons why civilisation has developed so slowly, and why human nature has remained so largely unaltered during the centuries we know anything about, is just this neglect of women. With few and rare exceptions they have been virtually shut out from what was going on in the world, excused from the toil of thought and the burden of responsibility, and carefully trained to concern themselves only with the little things of life. The one thing of real importance to the race which has been in their province has been the early training of children, and this they have had to do more or less by the light of nature, without applying to it any of the knowledge or the experience which, in other directions, has been painfully acquired and stored up for successive generations. The consequence of this has been, of course, that each new generation has started at the level of the women and has not come into contact with the advances of civilisation until the years of infancy have passed, by which time primitive instincts have been reinforced by habits and assumptions based on a low cultural and intellectual level. And in consequence each boy has had to make up for himself all the leeway, so to speak, between the women's and the men's level before he can make any further advance.

It is really more important to the race to improve women in any generation than to improve men, because they have the opportunity of passing that improvement on to the next generation at the earliest and most impressionable stage of life. The Jesuits used to say that if they could have a child till he was 7 he was theirs for life, but with that exception few people seem to have paid much attention to the very early education of children. Recently, as we all know, it has sprung into the limelight, and the psycho-analysts go so far as to maintain that what happens before the age of 4 is what fixes, and perhaps distorts, the whole of subsequent life. I do not propose to discuss that, but I do want to point out that this concern with infant education coincides with the advance in the position of women. It was not until they began to count in the world that science or education began seriously to tackle these problems. This is an entirely natural thing, of course, but it is interesting. It is one of the first ways in which the advance of women may be expected to be of value to the race, and to speed up the development of human nature.

The core of my subject, however, is the question whether women have changed at all in consequence of the obvious and widespread changes which have taken place in their position in the last 100 years. It is no answer to say that they have more opportunities for education, and more freedom of action. The point is, have these opportunities and freedoms altered their actual natures? I propose to confine my generalisations to the middle classes in this country.

YOUNGER WOMEN

Are the young ladies of to-day different from the young ladies of 1830, or are they just the same creatures, differently dressed? The outstanding characteristics of the young women of to-day appear to be self-reliance, energy, pluck, a certain hardness of fibre, realism, outspokenness, tenacity, and ambition. This list of virtues does not correspond at all with the Victorian idea of a young lady. We all know that she was timid, clinging, delicate, easily influenced, unselfish, and afraid of mice. But are the young women of to-day really as adamantine as they appear? And were the Victorians really as soft as they were supposed to be? There are, of course, modern girls who hate independence and responsibility, who hanker for a passive, sympathetic, parasitic way of life, and to whom sustained exertion and resistance come hard. What is more, I have noticed that this kind of girl is immediately popular with young men, who seem to be attracted at sight by the traditionally feminine qualities. This seemed to me interesting, and I think it tends to strengthen my belief that the other kind must be a natural and not an artificial product. For if there were not something very strong driving them towards the modern ideal (something stronger than a new fashion) they would not hold out against this marked preference of young men for the old-fashioned type. For, however girls may have changed, and whatever new things there may be about them, the desire to attract men has certainly not abated. It would be a foolish person who maintained that emancipation had made any impression at all upon the biological aspect of human nature.

On the whole, however, I remain of the opinion that modern young women tend to be of a sturdy and rather tough kind, and that the typically clinging vines among them are the exceptions. But were Victorian girls really what they were supposed to be?

Neither fiction nor biography appear to me to provide satisfactory evidence, nor do recollections of what has been told to me by the women of my grandmother's generation, or of the girls I was at school and college with. These were, on the whole, miserable at home, they disliked their fathers, and they wished they had been born of the other sex. Psycho-analysts, no doubt, could deduce something of their fundamental natures from these three emotions; but the only deductions I can make concern not their natures but the circumstances of their lives.

Their homes did not give them the sort of life they wanted; their fathers were the restraining authorities and the paymasters, and they saw their brothers and all contemporary boys enjoying the freedoms they could not have. It was in essays about young women, and the tracts and lectures addressed to them which were written in such abundance during the nineteenth century, that at last I found the Victorian miss in her completeness. These have the authentic ring; but in exhortation, not in evidence. If it proves anything about the real natures of the young ladies to whom it was addressed, I am afraid it proves that they were hypocrites, not ninnies.

A series of works on Female Duty, published in 1839, 1842, 1843, and 1844, throw some light on the character of the young ladies for whom Mrs. Ellis was writing. The whole scheme of life which she was upholding demanded that women should be content to be inferior, but evidently they were in need of being plainly reminded of the fact year by year as

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* Abridged from the Fawcett lecture, delivered at Bedford College, London, on Nov. 2nd.

a new generation left school. And what is more they had to be offered some compensation. Mrs. Ellis decided that the way to make young ladies swallow the pill of deficiency of power was to tell them that they had something even more effective, namely *influence*.

As my last resort, I tried to get evidence from the essays which professed actually to describe young women at different dates. They gave me some curious information. Just listen to this:

> "Young women of to-day live in a perpetual round of amusement; their three rules are to read novels, dance, and live in idleness. Twenty years ago no young woman would have ventured outside her parents' house without her mother; but now young girls go about alone by day and night in perpetual freedom; they read the most improper books, and the foam of a poisonous philosophy falls from their lips."

You would think, from the sound of this, that it was written by Dean Inge; as a matter of fact its date is 1800.

Now here is another, 83 years later in date, that is, exactly 50 years ago. It is taken from "The Girl of the Period," by Mrs. Lynn Linton:

> "The girl of the period is a creature who dyes her hair and paints her face, a creature whose sole idea of life is fun, whose sole aim is unbounded luxury, and whose dress is the chief object of such thought and intelligence as she possesses. . . Nothing is too extravagant, nothing too exaggerated for her vitiated taste. . . No one can say of the modern English girl that she is tender, loving, retiring or domestic. . . The girl of the period does not marry easily. Men are afraid of her, and with reason. All men whose opinion is worth having prefer the simple and genuine girl of the past, with her tender little ways and pretty bashful modesties to this loud and rampant modernisation."

The discovery of such similar descriptions and complaints at such different dates really brought me to a standstill. I concluded that there is no reliable evidence about what young women were really like 100 years, or even 50 years ago. Nevertheless I have formed these conclusions, and may as well give them to you.

I believe that women, even during the darkest age of subjection, were strong and independent by nature. I believe we have always been the tough sex, and the unsentimental sex. I am not sure that the immense weight of the contrary convention which has been piled up on top of us is not a tribute to this fact. It needed, perhaps, all that to keep us down. And so I believe that in natural equipment the young women of to-day are not much different from their grandmothers. In short, I don't believe that emancipation, as yet, has changed the natures of women.

OLDER WOMEN

Up to now I have been considering young women. When we look at middle-aged or old women, and consider health as well as temperament, we find evidence of change in plenty. All the sources from which I have sought this inconclusive evidence about young women yield quite definite and clear results as to older women. The novels, the memoirs, the exhortations, and above all the letters of the Victorian period leave no doubt at all that women grew middle-aged and old very rapidly, and that they suffered to an appalling extent from ill-health. Partly, no doubt, this was due to the absence of exercise and fresh air in childhood, partly to ridiculous clothing, and partly to the depressing effect of having nothing to do. But the great cause, and the chief destroyer of women was the prevailing habit of expecting them to bear an enormous number of children in quick succession. There was nothing very unusual in the middle of the last century in families of ten, or even twelve; and we must remember that a living family of ten probably meant at least four or five other confinements for the mother. The infant mortality-rate among the middle classes was very high. There is no doubt at all that, once they were married, women themselves were usually submerged in the process of breeding, and only emerged at the end worn out and broken in health.

I am putting this rather strongly, and perhaps over-stating the case. Some women were robust enough to stand up against this heavy strain, and to remain themselves in spite of bearing a dozen children. Others, of course, escaped by dying when their first child was born. And others remained unmarried. But on the whole it was the normal expectation that a woman would spend the years between 18 and 40 in repeated pregnancies—even if she had no living children to show for it in the end. And since women did, in fact, spend and break their lives upon prolonged and often fruitless maternity, we cannot deny that they themselves, their lives, thoughts, feelings, and bodies must have been conditioned by this function.

And nowadays it is not so. I do not propose to discuss causes, or explanations, or merits, or expediencies. For my purpose all that is needed is the fact. Nowadays the women of the middle classes rarely have more than two or at most three children. Hygiene and medicine and gynæcology have progressed so far that infant mortality among the middle classes is very low indeed. The women of this generation do not become submerged under the business of childbearing, and do not spend 20 years of broken and precarious health. They space out their children, and bring them alive into the world, and they are themselves better, and not worse in health for bearing them. And this is a very fundamental change indeed. The maternal function is, I do not doubt, the most essential part of a woman's nature. In so far as the changes of the last 100 years have released women from the fear and the dread of that function, and have turned it from a burden which destroyed them into a labour in which they can rejoice, I think we must maintain that women themselves have been changed, very greatly to their gain.

MURRAY MADE ACCESSIBLE

THE great dictionary of the English language which gave the late Sir James Murray and his collaborators nearly half a century of continuous labour, was followed last spring by the Shorter Oxford English Dictionary, which took another 30 years or so to prepare. The two stout quarto volumes, printed in triple column and containing nearly 2500 pages, made Murray available to a far wider circle, and indeed serves the purpose of its great parent to all but the pure specialist. The Shorter Dictionary may be regarded as that rare thing, the perfect general consultant; and now Messrs. George Newnes, Ltd., have made the Shorter Dictionary accessible to every household by reissuing it in 45 weekly parts at the price of one shilling a part. Numbers of people will want it to assist them in the pastimes of crossword puzzles and acrostics which have done so much to develop interest in words as counters. But the dictionary does what no other has attempted; it traces the history of each word, its origin, when it was first used in a new sense, and by whom. From the present fascicle the reader can learn that *altruism* was first recognised in 1853; that the phrase "all right" became blended into one word *alright* in 1893; and that the adjective meaning gaseous was first used in 1902 for an overhead wire serving the listener-in. If he is curious he may note that up to 1623 the word *algebra* referred to the surgical treatment of fractures, and that *ally* or *alley* is a recognition since 1720 in schoolboy vocabulary that the first marbles were made of alabaster. Each instalment of 56 pages will, no doubt, provide more than sufficient entertainment for seven winter evenings. The 45 weekly parts may be obtained of any newsagent or bookseller, or post free (1*s.* 2*d.*) from the publishers, 8, Southampton-street, London, W.C. 2.

AN ART DISCOVERY AT GUY'S HOSPITAL

THE librarian of the Courtauld Institute of Art (University of London) writes: "In the last number of THE LANCET there appeared a note on a fruit and flower painting at Guy's Hospital by John Teal Cooper, quoting from a letter from Prof. W. G. Constable of this Institute. Prof. Constable has now sailed for Canada, but in the meanwhile we have found out that the problem of the identity of this painter is even more complicated than we originally thought.

"There were apparently two men of the name of Cooper who both died in 1743, and who are both said to have painted fruit and flowers. One was, according to the *Daily Advertiser* of 1743, quoted in THE LANCET last week, John Teal Cooper, who was 45 years old when he died; the other was Joseph Cooper, born at Burford, who was 61 years old when he died. The *Daily Advertiser* referred to John as 'the Michael Angelo de Campidolo of his age.'

"Horace Walpole, however, mentions a Cooper (without a Christian name) but refers to him as having imitated Michael Angelo da Caravaggio in painting fruit and flowers, and mentions that he died towards the end of 1743. Hence arose the confusion between Michael Angelo da Caravaggio and Michael Angelo de Campidolo. The mistake was Walpole's, for, although forgotten now, Michael Angelo de Campidoglio was at that time quite a well-known painter of fruit and flowers. A Joseph Cooper is known to exist, as there is a mezzotint signed by him in the British Museum. Whether he ever painted fruit and flowers is doubtful. He is mentioned in Thieme Becker's lexicon as a fruit and flower painter, and it is possible that the writer of that notice, who also was misled by Walpole, erred as we did and, with insufficient proof, attributed to Joseph, John's fruit and flower paintings."

A MANIAC'S STORY

IN the last few years a number of retrospective accounts of an attack of mental disorder have been published. Some of them have been valuable as detailed material for the psychiatrist or as arguments in the cause of mental hygiene; others are suspect because of the falsification, doubtless unintentional, which the experiences have undergone. The latter group would include this book, a book entitled The Maniac,[1] first published in 1909 and now reprinted. What is described does not correspond to any type of mental disorder, and the dramatic heightening and arrangement of the detail make it unsuitable for serious study. As a painful story with a moral it has merit.

BIRTH CONTROL CLINICS.—A lecture on the Theory and Practice of Contraception will be given to medical students by Dr. L. C. Butler, on Friday next, Nov. 10th, at 6 P.M., at the Walworth Women's Welfare Centre, 153A, East-street, S.E. Practical demonstrations will be given on Friday, Nov. 17th, at 6 P.M. and 7 P.M., and on Friday Nov. 24th, at 6 P.M. and 7 P.M. These lectures will be open to students who have completed their gynæcological courses, and those who wish to attend them should communicate as soon as possible with the secretary of the Centre, stating which day and time they select.—A meeting will be held in connexion with the North Kensington Women's Welfare Centre on Tuesday, Nov. 14th, at 5 P.M., at 14, Holland Park-road, W.14, when Dr. Margaret Rorke and Dr. Helena Wright, medical officers at the Centre, will describe the work of the clinic. Mr. J. A. L. Duncan, M.P. for North Kensington, will preside. The subscribers to the clinic are asked to arrive at 4.15 P.M. to receive the annual report and statement of accounts.

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[1] The Maniac. A Realistic Study of Madness from the Maniac's Point of View. Anonymous. London: Watts and Co. Pp. 259. 7s. 6d.

Appointments

WIGFIELD, A. S., M.B., B.S. Lond., has been appointed Certifying Surgeon, under the Factory and Workshop Acts, for Buntingford, Hertford.

Vacancies

For further information refer to the advertisement columns

Birmingham and Midland Eye Hospital, Church-street.—Res. Surg. O. £200.
Birmingham General Hospital.—Res. Surg. O. £180.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.
Bristol, Southmead Municipal Hospital.—Asst. Res. M.O. £200.
Bristol University.—Chair of Anatomy.
Cancer Hospital, Fulham-road, S.W.—Res. M.O. £200.
Cheltenham General and Eye Hospitals.—H.S. £300.
City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—Asst. Surg.
Dorset County Council.—County M.O.H. £1100. Also Two Asst. M.O.'s. Each £500.
Fulham Hospital, St. Dunstan's-road, Hammersmith, W.—Res. Med. Supt. £1000.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Hornchurch Children's Home, Hornchurch, Essex.—Part-time M.O. £200.
Hull Royal Infirmary.—Hon. Physician.
Ilford, King George Hospital.—Hon. Ophthalmic Surgeon. Also Res. M.O. £250.
Kettering and District General Hospital.—Res. M.O. At rate of £200.
King's Lynn, West Norfolk and King's Lynn General Hospital.—H.P. At rate of £125.
Lambeth Hospital, Brook-street, Kennington, S.E.—Asst. M.O. £350.
London University.—Sir William Dunn Chair of Pathology at Guy's Hospital. £1400.
Middlesex Hospital Medical School, W.—Two Surg., One Obstet., and One Otological Registrarships. Each £300.
Miller General Hospital, Greenwich-road, S.E.—Cas. O. and Out-patient Officer. Each at rate of £150. Also H.S. and H.P. Each at rate of £100.
Poole, Dorset, Cornelia and East Dorset Hospital.—Hon. Asst. Anæsthetist.
Princess Louise Kensington Hospital for Children, St. Quintin-
[illegible] Part-time Pathologist and Bacterio-

Pris [illegible] £505 7s.
Quee [illegible] *Hospital, Marylebone-road, N.W.*—
[illegible] Each at rate of £100. Also Asst. Res. M.O. At rate of £80.
Queen's Hospital for Children, Hackney-road, E.—Physician to the Skin Dept. H.P. and Cas. O. Each at rate of £100. Also Clin. Asst. to Orthopædic [illegible]
Reading, Royal Berkshire Hospital.— [illegible]
Rochester, St. Bartholomew's Hospit [illegible] of £225.
Royal Free Hospital, Gray's Inn-road, W.C.—Hon. Anæsthetist. Also Second Asst. Surg. to Ear, Nose, and Throat Dept.
St. Leonard's Hospital, Hoxton-street, Shoreditch, N.—H.P. At rate of £80.
St. Mary Islington Hospital, Highgate-hill, N.—Asst. M.O. £250.
Salvation Army Mothers' Hospital, Lower Clapton-road, E.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £80 respectively.
Southampton County Borough.—Clin. Tuber. O. and Asst. M.O.H. £750.
West Bromwich, Hallam Hosp.—Two Res. H.P.'s. At rate of £200.
West London Hospital, Hammersmith-road, W.—Cas. O. £250.
Westminster Hospital, Broad Sanctuary, S.W.—H.S. to Ear, Nose, Throat and Eye Dept. At rate of £104.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Ulceby, Lincoln, and Bicester, Oxford.

DUBLIN UNIVERSITY BIOLOGICAL ASSOCIATION.—The opening meeting of this session was held last Saturday in Trinity College, when the president-elect, Dr. Geoffrey Bewley, read an address on pulmonary tuberculosis amongst the out-patients. A discussion followed, in which Dr. E. T. Freeman, Dr. J. A. Harbison, Dr. T. G. Moorhead, and Dr. J. W. Bigger took part.

MILK FOR HOSPITALS.—Statements having been made that, under the new marketing scheme, hospitals would have to pay the full retail price for their milk-supplies, the Milk Marketing Board has issued a statement that unless a hospital's daily purchases of milk are very small "such purchases will be regarded as semi-wholesale transactions for which the Board has not prescribed any fixed price. Consequently milk may be bought by hospitals and other similar institutions in fairly large quantities at any price between the wholesale price and the retail price for the region or district concerned."

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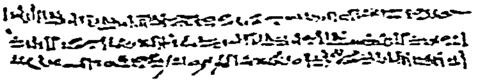

(Reads right to left)

LINES CONTAINING ANCIENT EGYPTIAN MAGIC WORDS TO BE SPOKEN IN USING THE VESSELS FOR MEASURING MEDICINES.—The magician-doctor of ancient Egypt was as careful to "enchant" his medicine measures and bandages as is the modern physician to have these auxiliaries rendered antiseptic; evil spirits might, otherwise, play as much havoc then as germs do now. The text here reproduced related to measures, and reads: "The word for the *d b h* measure on taking it in order to measure a prescription: As for this measure, I am measuring this prescription therewith. It is the measure with which Horus measured his eye, it (the eye) was tested and I found it living—well, healthy. This prescription is measured with this *d b h* measure in order to bring down therewith every sickness which is in this body."

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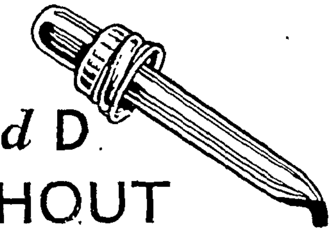

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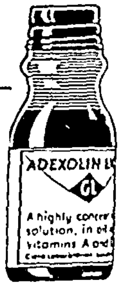

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ADDRESSES AND ORIGINAL ARTICLES

A PSYCHOLOGICAL REGARD OF MEDICAL EDUCATION *

BY CHARLES S. MYERS, C.B.E., M.D., SC.D. CAMB., HON. D.SC. MANCH., F.R.S.

PRINCIPAL OF THE NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY

MY position here to-day as an industrial psychologist is, I feel, not unlike that in which I often find myself when asked by an employer how, in ignorance of all technical details, I can be expected to increase the efficiency of a particular business. This criticism the industrial psychologist meets by his contention that wide previous experience enables him the better to realise and to remedy defects in analogous situations; and that, just as commonly the outsider sees most of the game, so the industrial psychologist can often recognise and remedy defects which tend to be overlooked by the expert who has lived in their midst. I wonder whether my acquaintance with general and applied psychology and my distance from medical training and practice may not help me to throw light on the problem of medical education.

For the outlook of the industrial psychologist is a singularly wide one. He does not deal merely with industry and psychology: he is concerned with every aspect of the human factor throughout every kind of occupational life. He is engaged not only in investigating and improving all kinds of business and professional working conditions that affect the mental and bodily health and the happiness and efficiency of the worker, but also in studying the best methods of his training, his recruitment and his selection, and in helping him even earlier to make such a choice of a career as accords with his innate mental and physical abilities, his acquired knowledge, his temperament, character and interests, and his social and financial position.

Different Kinds of Ability

Of innate mental abilities or aptitudes there appear to the applied psychologist to be three kinds: special, group, and general. The last are common to the exercise of all mental processes, though varying in them widely in degree, whereas the first are each particular to some one kind of mental process. The most important general ability is known as general intelligence—the ability to discern and to utilise relevant relations, whether between ideas, written symbols, or concrete objects. Now two of the most obvious essentials for entry into the medical profession are at least a minimal amount of general intelligence and at least a minimal amount of what we may usefully term scientific ability—the ability to employ scientific methods and to appreciate scientific evidence. Within the medical profession the field of possible occupations is so wide that opportunities are afforded for unusual excess or defect in almost every other kind of mental ability and in almost every trait of personality. The student who is temperamentally averse from close and continual social intercourse may gravitate towards medical research or to preventive medicine; if he excel in manual dexterity, he may specialise in surgery: should his interests lie predominantly in the young, in the poor, in the workings of the mind, or in country life, he may satisfy them by engaging in corresponding medical practice. But unless he be endowed with at least the required minimum both of general intelligence and of scientific ability, no applicant for vocational guidance can be advised to enter as a medical student; high general intelligence being useless to him, if it be conjoined only with literary, musical, or other special abilities, and adequate scientific ability being hardly conceivable in the absence of sufficient general intelligence.

Within the field of industry and commerce, the industrial psychologist always insists that those of the new entrants who have the innate aptitudes requisite for them to rise later to the higher positions in their firm should be recognised as soon as possible and should receive early suitable training to fit them ultimately to such posts. At the universities a similar separation is made: the pass man and the honours man are segregated from the first to receive different educations and to undergo different examinations. Even in the elementary schools it is becoming more and more usual for the bright, the average, and the stupid children to be grouped and instructed separately, so that the more highly intelligent are not hindered by the needs of the less intelligent and the latter are not pushed with the vain object of keeping pace with the former. And despite certain conceivable objections, the advantages of such differentiation have become generally recognised. But in medical education, as in the case of other professional curricula, whatever be their general intelligence and their special abilities, students are given the same technical instruction; even though only the ablest may take a first university medical qualification, there are nevertheless vast differences in the general and special abilities of those who obtain it.

Let us consider the medical student whose general intelligence is relatively weak in regard to abstract relations and ideas, but strong in regard to relations in the practical affairs of everyday life. His comparatively narrow interests are in the art of healing, and by virtue of his other mental abilities and of his temperamental qualities he may ultimately make an excellent doctor. But his vision is neither wide nor abstract enough to enable him advantageously to profit by the kind of professional education which is suited to the medical student of higher intelligence—the more strictly *centripetal* kind of education which begins with a number of different, more or less separate, scientific subjects and gradually becomes centralised in the science and art of medicine. In the case of such a student the applicability of the details of pure science to his medical interests needs to be more often kept before him; he demands a more *centrifugal* education. The question naturally arises, therefore, whether during their five or six years of medical education, as year by year it becomes increasingly complicated, differently gifted medical students will not one day receive correspondingly different training, according as they are innately fitted for abstract thought or for practical action, or even for the medical, surgical, scientific, general, or more special lines of work in their profession.

The Man and the Job

It is the function of the industrial psychologist not only to attempt to give vocational guidance, i.e., to choose the best job for a given man, but also to select the most suitable applicants for vacant posts, i.e., to choose the best man for a given job. The latter he achieves first by observing what are the abilities and the traits of character and temperament necessary for success in that job, and then by devising and applying such methods of examination as will best determine whether or not the candidate possesses those abilities and traits. The candidate's abilities are assessed by specially devised tests, his temperamental and character qualities by a systematically conducted interview. The tests employed by the industrial psychologist are usually intended for the novice and are therefore of such a nature that they assess innate abilities, not specially acquired knowledge and skills; the interview is so planned as to consist in the separate assessment of the various traits of personality which are needed for success in the particular occupation, as well as in a final assessment based on the general impression which the candidate gives the interviewer.

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* Bradshaw lecture (abridged), delivered before the Royal College of Physicians of London, Nov. 2nd, 1933.

But the wide field of the medical profession provides opportunity for the exercise of so many varieties of special ability and of temperament and character, that these general methods of vocational selection require modification. Nevertheless they could be readily applied to eliminate the unsuitable entrant to the medical profession on the grounds of his lack of innate general intelligence and scientific ability, thus taking the place of the present examinations which are too often tests of memory and of ability to reproduce the acquired minutiæ of general and scientific knowledge, and which allow the candidate to enter repeatedly until he has crammed sufficiently to satisfy the examiners.

PREMEDICAL STUDY

If the prime object of premedical scientific study had always been to teach the broad principles of natural science, selecting only such facts and details (apart from those needed to establish and adequately to confirm those principles) as are likely to be of practical help to the average doctor in his professional career, there would not have now arisen the general complaint against the teaching of physics, chemistry, and biology to the medical student. These subjects, however, are taught not by persons who have any medical training or interest, but by professed chemists, physicists, and biologists. They are not sufficiently taught, as conceivably they might be taught for the school-leaving examination, with a view to improving general culture; nor are they taught, as conceivably they might be taught for the first M.B. examination, with a view to training doctors. Too often the teaching proceeds on the assumption that there is only one way of teaching and examining in a subject —namely, in order to prepare his pupil to become a specialist in that subject—a fallacy which, until recently at least, has been recognisable throughout the medical curriculum, in physiology, anatomy, pathology, and even to some extent in the special departments of medical and surgical practice. It seems worth consideration whether the time has not come to establish a definite medical discipline throughout the training of the medical man.

A lengthy research which has just been completed at the National Institute of Industrial Psychology has demonstrated that the effects of routine practice at any given manual operation (and the same appears to hold for any given mental operation) are hardly transferable at all to other manual (or mental) operations; whereas the effects of a systematic training in the general principles underlying the performance of any one operation are very distinctly transferable so as to improve the performance of other more or less similar operations. Such experimental results bid us no longer assume that the routine exercise of memory in learning masses of formulæ or other details, or the routine practice in acquiring various skills through hours of titrating, staining, dissecting, or other laboratory work, provides a useful practice-ground for the subsequent learning of other material or for acquiring skills of other kinds. Routine practice increases the speed and accuracy of performance mainly by the elimination of needless and harmful mental or muscular processes and by the coördination of necessary processes so that they become integrated and can be performed more automatically. Although by training we cannot hope to improve any innate ability, we can improve methods of making the best use of what is inherited. What is of special value for this purpose is a knowledge of underlying general principles; and this, in the case of physics, chemistry, and biology, should be largely imparted before the age of 17, while these subjects are being taught, not as introductory to a medical future, but as a necessary subject of general education.

At the present time, a lad's general education ceases at school when, at the age of 16 or 17, he has passed his school-leaving examination. Thereupon he proceeds to specialise; and if he chooses the medical profession, he devotes his whole time to physics, chemistry, and biology, just as if he were training to become a physicist, chemist, and biologist. Surely the medical student of average ability or less need not spend so much time on masses of detail which, having little bearing on general principles, will be later forgotten; nor should his practical work be carried to such an extreme that it has no corresponding educational value for the doctor. Even if we regard such acquisitions as excellent for the man of high scientific ability and as valuable generally in providing an ideal unconscious background for the student's professional career, their enforcement implies the assumption that at 16 a lad's general culture no longer needs encouragement; it implies that henceforth he may forget and make no progress in what little he has learnt of literature, history, and languages, and that he may devote himself entirely to natural science. Almost any subject can serve to promote general culture, if only it be taught from a sufficiently wide point of view; but there are few teachers of natural science who are competent so to teach.

If the countless hours now spent in practical work in physics, chemistry, and biology served a commensurate psychological and educational purpose in the case of the average medical student, less objection could be urged against them. The value of such work could be enormously enhanced if it were more carefully directed towards training and exercising what is so essential for the successful diagnostician—the ability to select and to draw deductions from the available evidence. Such training, however, has been neglected, not because its importance has been underestimated, but because it is so much more difficult to examine the candidate in these abilities than to examine him in and to mark memorised facts.

Two other important objects of practical work are: (1) to improve the student's memory and realisation of facts by getting him to reveal them by his own handiwork instead of by merely hearing and reading about them in other people's words, diagrams, and pictures; and (2) to impress on the student the principle of not relying on the statements of others, but of verifying them by experiment and experience. But many would agree that these objects could be attained with less expenditure of time. Yet another object is often advanced in favour of practical work: that it is heuristic in character and therefore that it encourages the spirit of discovery. But in fact it seldom does anything of the kind. For the student is always forewarned in his practical work what he is to expect; and if he fails to find it, he seldom learns why he has found something different. All that he realises is that he has done the experiment wrongly, and he repeats it until he gets the text-book result. In other words, his practical work consists merely in confirming what is already known to him; in his subsequent anatomical dissections his aim has even been to "make it look like 'Gray'"!

ANATOMY AND PHYSIOLOGY

The average medical student would not suffer if he were no longer required, as in my day at least, to recognise the form and size of each of the small bones of the wrist and hand, or to describe, as he is to-day asked, the origin, course, and relations of the thoracic duct or of the obturator nerve, the arterial supply of the spinal cord, or the course, tributaries and relations of the inferior mesenteric vein. Nor would he suffer if he were no longer expected to dissect the entire body. The divorce of the old human anatomy from physiology has resulted in the former becoming a subject of medical study which, as such, affords little scientific training. It consists too exclusively in learning innumerable facts. Embryology may throw a little of the light of science on them; comparative morphology, which might do so, hardly finds room for admission. Moreover what the medical student learns of human anatomy is derived from dissection of the cadaver, the desiccated organs of which have lost their true form and their relations in the living body. Little attempt is made at this stage of medical education to gather anatomical information from the recently alive corpse in the post-mortem room; the living subject and the teachings of radiography are also too often neglected. The movements of the viscera are hardly ever seen by the student of human anatomy, nor are the synergic actions of the skeletal muscles explained to him; structure is taught too entirely divorced from function, both normal and disordered. Even the acquirement of manual dexterity in dissection is not assured.

Teachers who cannot Teach

Other defects in medical education are largely attributable to the inadequate selection of teachers and to the increasing number of specialised subjects. From the start to the finish of his medical education, the student is taught by those whose only qualification to teach is their professional eminence. The industrial psychologist has had ample experience of the fact that the most successful and efficient worker does not necessarily make the best teacher. In industry it is mainly a matter of teaching manual technique; and not infrequently the expert proves unable to describe correctly how he carries out a skilful operation, or when he illustrates it at a slow pace he is found to employ movements quite different from those which he employs to perform it at his normal speed. Because there may be many different styles of procedure adopted—e.g., by various surgeons of equally high skill—that is no reason why the student should not be instructed in the general principles which must underlie all good methods and be taught how to avoid bad operative procedure. The industrial psychologist recognises that there is no one best way of doing anything, but that there are a number of equally good ways suited to different persons; he also recognises that there are undoubtedly bad habits of work into which the operative must not be allowed to fall. Similarly there are good and bad methods of the doctor's approach to and general handling of his patient. Yet how seldom is adequate instruction given to-day in such technique, and how rarely is the medical student examined therein.

At the universities it is notorious that the ablest professors may make the worst lecturers. Yet, alike at the universities and at the medical schools, no attempt is made to select or to train teachers, whereas to those who are preparing to teach in elementary and secondary schools systematic instruction and subsequent examination in the science and art of teaching are given. It is not surprising, then, that undergraduates complain of the inadequate teaching they too often receive, and of the number of unwanted lectures they are forced to attend. Facts, they rightly argue, may for the most part be learnt from text-books; "tips" and mnemonics (if alas! necessary) from special "grinds"; it is the coördination of facts and their application, the acquirement of technical skill, which they seek to learn through their teachers.

Moreover, from the start to the finish of his medical education, the student is taught by specialists in far too watertight compartments—by chemists, biologists, anatomists, pathologists, pharmacologists, gynæcologists, oculists, and a host of others. The average medical student will become a general practitioner, with one thousand insured persons, and often more, under his care. Yet from the start to the finish of his education he never comes in touch with one of his own future kind. Even in the general wards of a general hospital he is taught by consultants who are usually specialists in some branch of medicine or surgery, or at all events cannot pretend to as full a knowledge of the whole of either of these subjects as is expected from the student at his final examination.

Physiology, pathology, and the like can be taught by their specialists, as pure sciences should rightly be taught, in total disregard of their applied value—their practical applications to medicine and surgery. Knowledge of and research in pure science are very properly prosecuted for their own sake, not for their possible usefulness. The life-history of bacteria or the histology of tumours may be studied by one who has never seen their manifestations or appearance in the sick person. But what can the terms anthrax or carcinoma mean to the student if he is introduced to them when he has never seen a case? Undue stress tends to be laid on problems which have been subject to current or recent research, with neglect of more commonplace and practically important knowledge. The physiologist, for example, has carried out relatively little research on the rate of progress of food through the alimentary canal, on diet, or on the physiology of growth, childhood, youth, and old age. He may remember little, and does not prepare the student for what he will later learn, of physiological knowledge derived from clinical observation. The capture of histology from anatomy is but an index of his dominant interest in minute physiology—of the cell and of isolated tissues and organs—rather than in the intact organism.

How many of the details in these various sciences with which the medical student is now overburdened will he remember unless they can be and are associated with their applications? Some details are of course essential for the grasp of general principles. But many of them are only necessary for the equipment of the professed chemist, physiologist, or pharmacologist. How much more interesting, especially to the student of limited outlook, and how much more readily learnt by him would those details and principles be which are demonstrably of practical value for future practice if their applicability could be explained to him at the time, instead of treating them as the property of a pure science. Until recently our British practice has been to keep the medical student, as if in a monastery, remote from the world of medical experience, while he bathes in the pure sciences. Surely the right course lies midway between this and the French practice of making the student spend half his time in the wards as soon as he begins to study anatomy and physiology.

Biological Differentiation or Mechanical Analysis

In educational specialisation it is important to realise the profound difference between biological differentiation and mechanical analysis. Even the unicellular organism digests, excretes, secretes, respires, and propagates. Although it has no nervous system, it is irritable and sensitive to changes in environment; it moves, and in virtue of its vitality and especially of its mobility, it must be credited with some rudimentary consciousness, however different from our own. In the multicellular organism specialised tissues, organs, and systems make their appearance, each consisting of cells which are differentiated to undertake predominantly one or other of these different functions—one tissue, organ, or system specialising in digestion, another in excretion, a third in respiration, a fourth in coördination and direction, and so on. But this differentiation is never complete. Each individual cell still carries out virtually all of the functions of the unicellular organism, in addition to specialising in its own particular function; each cell takes up oxygen and nourishment, it still excretes, it is still able to propagate.

Is that not the ideal method of specialisation at which we should aim in medical education? Psychological experiments have shown that it is generally easier to learn a whole as a whole than by learning separately its constituent parts. Therefore, should not the future clinician in his hospital period receive first a more complete education in the whole range of medicine and surgery before he visits the specialist departments to learn about the rarer diseases? At present the commoner manifestations of these specialties are not seen in the general wards and the general out-patient departments; unlike the individual cells of the multicellular organism, the general consultant physician and surgeon has lost touch with them. And the specialist cannot help being more interested in the rarer diseases of his specialty which are relatively of less importance to the future practitioner who would prefer instead a fuller training, say, in passing a Eustachian catheter, in incising the tympanic membrane, in washing out an antrum, in injecting varicose veins and piles, and in becoming familiar with remedial exercises and with the rudiments of orthopædic cobbling.

Instead of following the path of biological differentiation, medical education has evolved rather along the lines of mechanical analysis; as if a chemical compound had been split into its constituent radicles and instruction confined to these isolated factors, regardless of the fact that the whole is far more than the sum of its parts. Biologically and psychologically, first comes the vague undifferentiated whole—the unicellular organism—and later appear the discrete parts. Logically, but unpsychologically, the parts are first learnt without reference to the whole; and somehow, without adequate system, those parts are expected to be synthesised by the learner. Thus is perpetuated the fallacy of treating each patient not as a living unitary individual, but as a case of a certain single disease, and the tendency persists to divide diagnostic and therapeutic methods into those belonging to the clinician and those belonging to the laboratory scientist, into those belonging to the physician and those belonging to the surgeon.

For the origin of this attitude the history of medicine is largely responsible. In bygone times surgery was not regarded by the physician as his proper province, and has therefore developed on independent lines. The psychological effects of this isolation are not yet eradicated. They are only too readily imitated from their chiefs by young house physicians and house surgeons, the former regarding the latter much as a philosopher might regard a manual labourer, the latter regarding the less direct procedures of the physician as mysterious and unprecise gropings in the dark.

Clinician and Scientist

Not less is the mutual contempt and distrust of the clinician and the scientist. Medicine began as an art, based on few systematic principles and on scant scientific information. Its technique has grown to such proportions, medical knowledge has so vastly increased, that in some quarters medicine tends to be regarded far too strictly as a science. As an art, it demanded, like other arts, the exercise of intuition—the arrival at decisions concerning diagnosis and treatment, not always through reason and intelligence, but through the flashes of insight due to the unconscious workings of the mind, determined in direction and value no doubt by previous experience. In former days too medicine was forced to lay greater stress than now on drugs, diet, external environment, on the vis medicatrix naturæ, on the constitution or diathesis of the patient and his family, and on the personal influence of the physician. The medical student acquired his training by apprenticeship to a private practitioner. But now in virtually all occupations the place of apprenticeship has been taken by technical education. Within the memory of many of us a period has passed away when injuries to joints and bones and visceral diseases and disturbances were ascertained largely by the doctor's own ear and hand, and when it was usual for the student himself to carry out blood counts, the examination of urine, &c., of any of his patients within the hospital wards. Since then elaborate new methods of examination have been devised, the patient's fluids being removed to the pathological building for report or referred to a special department for an X ray photograph or an electrocardiogram. Of the practice of all these less subjective, more scientific, methods of procedure, the student learns something by his visits to these departments and especially through the university clinic teams which have been established in a few teaching hospitals.

But inevitably the hospital consultant's knowledge of these methods and his faith in them are less profound than the scientist's. He knows that diagnosis and especially treatment cannot depend always and wholly on the aids which laboratory methods can render. He realises that the teachings of physiology and pathology in their experimental work on various living fractions of an entire organism are not always applicable to the entire organism; that, as an individual, the patient cannot be considered a mere appendage to the bacterial invasion or other cause responsible for a disease or a growth. He is convinced that the experience and insight of the clinician must stand guard over the applications of research.

And just as the ablest clinicians recognise not only the limitations of research, but also the inestimable value of the new instruments of technique with which medical research has provided them, so there are research workers fully aware that pure research must always be the servant, not the master, of the physician or surgeon. They admit that in the treatment of the sick other considerations must be taken into account besides conclusions drawn from experiment and based on a purely physical standpoint. Nevertheless, they fear, not without foundation, that the excessively empirical attitude of many hospital consultants tends to extinguish the research spirit of students. They lament that, both for this reason and because physiology—or more particularly biochemistry and biophysics—seduces some of the most promising research workers from completing their medical education, recruits are now lost to medical research of a more strictly clinical kind. They would therefore have the medical student, before he comes in touch with patients, better prepared for the wide gap he will discover between the simplicity of experimental science and the complexities of practice.

Unpreparedness for Practice

The average medical student realises too late that in practice he cannot depend for diagnosis and treatment on the elaborate methods he has seen employed during his hospital education. Small wonder that he comes to wish he had not spent so much time in learning technique, in attending grinds, and in being spoon-fed for examinations where he may be questioned on the characters of the organism responsible for bubonic plague or the microscopic structure of teratomata of the testicle. Small wonder that he comes to wish he had spent more time in the wards, and less time in seeing the rarer operations in the theatre; that he had learnt more about prescribing drugs and diets, and gained more personal experience in bandaging, passing a catheter, and other manual dexterities, particularly in such common or emergency operations as empyema drainage, blood transfusion, and those needed for amputations, appendicitis, or strangulated gut. He will regret he had been encouraged to give so much attention to the methods of diagnosis of rare conditions and so little to treatment, particularly in the early stages, of such common diseases as colds, sore-throats, rheumatic and gouty affections, and disorders of digestion, and in the late stages of incurable diseases of which he saw so little in hospital.

The general practitioner realises too late how unprepared he is for the conditions he will meet in practice; how often he is forced to rely on intuition as to whether or not a patient deserves systematic examination for the diagnosis of his state; how little he has learnt of the palliative, as distinct from the curative, functions of the physician and surgeon; how ill-equipped he is to give advice on general health and hygiene, particularly in the case of children, and expectant or actual mothers, and on prognosis in relation to insurance companies; how little he has been taught of preventive medicine and of the public health services that are now required of him; how ignorant he is of the best attitudes and approaches of the practitioner towards his patient, of the motives and other determinants of human behaviour, and of the anxieties and the marital difficulties of his patients which are so often a fundamental cause of their bodily ill-health.

Fundamentally, it seems to me, the whole problem arises from the conflict between the ideals, needs, and interests of the general practitioner, on the one hand, and those of the medical scientist and the consultant on the other, who are his sole teachers during his years of clinical study. If a common curriculum must at present be maintained for the education of all three, can there be any doubt that just as an appropriate training is provided immediately after qualification for the future medical research worker and for the future consultant physician and surgeon, so immediately after qualification an appropriate further training given by experienced general practitioners should be provided for and required of the future general practitioner before he receives his diploma or degree? It is hardly necessary to point out how different is the life-work of the consultant and the general practitioner and the relation between them and their patients.

A Mechanistic Outlook

The difference in outlook of the medical scientist and the medical practitioner deserves some further consideration. The physiologist and the pathologist tend to regard the human being as a collocation of physical mechanisms. They restrict the term science to the mathematics, physics, and chemistry of matter. If living matter consists in more than these, then that "more," they argue, lies beyond the domain of science; anything in life resembling the direction and purpose which we all recognise in our own minds is foreign to natural and to medical science. And so the medical student learns, from start almost to finish, to regard the living organism merely as an aggregate of machinery. While he is taught in the utmost detail the functions of the normal human body, he learns virtually nothing of the functions of the normal human mind. All that he is taught of this in his physiology is a mere smattering of facts about touch, taste, hearing, and vision, mainly in so far as they can be brought into some more or less hypothetical relation with material structures in the skin, tongue, cochlea, or retina; and a mere smattering of facts about visual, auditory, and verbal perception and imagery, partly because, on quite erroneous grounds, it has been supposed that the "seats of consciousness" for percepts and images have been experimentally localised in definite areas of the cerebral cortex.

He learns nothing in his physiology of the relations between mental and bodily activity; he is taught nothing about the emotions, despite their intimate connexion with endocrine and visceral activity. He learns nothing about intelligence, although later he will have to consider it in relation to mental and endocrine deficiency. He learns nothing of the psychology of suggestion, despite its frequent use by him in everyday practice. Of memory, impulse, and volition, of the differences between the mind of the child, the adolescent, and the adult, he also learns nothing. All that is required by the General Medical Council, in a regulation now exactly forty years old, is that before qualification the medical student shall have attended at least four-fifths of a course of 12 lectures on mental diseases and 12 clinical demonstrations at some recognised institute for the insane. Of the mechanism, of the results, and of the treatment, of the common quasi-normal mental disturbances and of the uncertifiable disorders of the mind, he learns virtually nothing.

Is this an adequate preparation for appreciation of the important part which the mind is now almost universally recognised to play in bodily disorders? Does it not tend to perpetuate the hardly bygone times, when a psychoneurotic patient might be sent from department to department of a general hospital to be treated according to the temporary manifestation of his unrecognised psychoneurosis; or when in private practice such a patient might be successively submitted to a series of operations? Does it prepare the practitioner to recognise the psychoneurotic element responsible for some of the commonest disorders of digestion, respiration, menstruation, and circulation? Does it give him any knowledge of the nature and phenomena of mental conflict and repression, of mental maldevelopment, fixation and regression, so that he knows how to treat mental depression, drug addiction, sexual aberrations and malpractices in adults, truancy, stealing, stammering and enuresis in the young? Does it prepare him for the increasingly recognised fact that the general practitioner can do much to prevent not only ill-health but also juvenile delinquency?

Put Psychotherapy on a Firm Basis

Is psychotherapy, with the psychological training preparatory for it, to be excluded from medical education because of the wild claims and generalisations of certain schools whose rival extravagances, nevertheless, are based on discoveries of undoubted truth and importance? Just as it has been said that biochemistry and biophysics—which originated not from chemistry and physics but from physiology—urgently need recruits from among pure chemists and pure physicists, so it is important that modern psychotherapy—which arose not from psychology but from medicine—should obtain recruits from those who have received the systematic training of experimental psychology, in order to place this latest specialty on a firmer scientific basis. Even if a long period of expert treatment by specialists is requisite in certain cases, especially in neglected cases, there are numerous others which can be successfully treated by the general practitioner if only he had been trained to recognise and treat the prevalence and presence of psychoneuroses. Surely the teaching of psychology, psychopathology, and psychotherapy is not to be excluded from normal medical education because hitherto the physiology and pathology of the body and pharmacology have appeared to be so much more important that it has been impossible to find time for the study of mental processes; or because the study of the mind can never be recognised as a science until suggestion, memory, will, hysteria, hypochondria, anxieties, and fears have been allocated to a material basis? "Imaginary diseases," I recall my chief once saying to me during my house physicianship, "require imaginary remedies." This was the view largely prevalent thirty or forty years ago, when it was the practice to treat medicinally or surgically every disorder which could be attributed to localisable and visible disturbance in a bodily organ or system, and to consider psychotherapy only when the disorder was of an inexplicable, "functional," nature. The fallacy underlying such a view is, I fear, by no means extinct to-day.

It may be urged that my psychological training leads me to exaggerate the importance of this subject. But the medical psychologist has clearly demonstrated the importance and prevalence of emotional and psychoneurotic disorders in the factory and the office, not only as causes of industrial unrest, but as responsible for much of the long or repeated absenteeism ascribed to gastritis, rheumatism, heart attacks, or dysmenorrhœa. Moreover, since psychology, psychopathology, and modern psychotherapy have had hitherto no place whatever in the official general medical curriculum, any distortion of their claims on my part (which I do not for one moment admit) becomes of little importance. Similar objections must indeed confront every advocate of progress in medical education. For medical education is, as we have seen, almost wholly in the possession of specialists, each with his own vested interests, each maintaining the supreme importance of a full knowledge of his subject for the medical student, and strenuously opposing any reduction in the time devoted to it.

Apprenticeship

Progress can only be made if a conscientious effort is made in common to determine and to agree upon the objects of medical education. The school teacher during his training learns not only what, but also how, he is to teach. The clergyman during his training learns not only what, but also how, he is to preach. Both teacher and clergyman are instructed in the practical difficulties with which they will meet in their future educational and parochial work, and how these difficulties may best be overcome. Such training will not make a teacher or a clergyman efficient, if he be naturally unfitted for his work. But it will unquestionably serve him as a short-cut to success, saving him unnecessary trials and errors in the otherwise needlessly dear purchase of experience.

In the professional part of medical education and examinations, can we rest satisfied with the current proportions of stress laid on knowledge of general principles, facts, and implements, on the one hand, and on skill and wisdom in their use in actual practice, on the other? If surgery cannot be properly learnt from actual operations until the student has passed a qualifying examination, such learning should surely not be deferred until the newly fledged general practitioner is earning his living in private practice. If the surgical specialist acquires his experience by years of hospital surgery and attendance on his surgical chief after he has attained his first medical degree, surely the general practitioner should be similarly compelled—for a briefer period—to do likewise. Could there not be a kind of apprenticeship period for the general practitioner between the passing of the present examinations for a first medical qualification and the actual conferment of the first medical diploma or degree? Such apprenticeship would be needless for the future specialist and research worker, who would continue, as at present, to work for a higher medical, surgical, or scientific degree. The increased duration of education will be urged against a period of apprenticeship. But if the time at present devoted to physics, chemistry, and biology after the school-leaving examination could be reduced; if the years devoted to anatomy, physiology, and pathology could be shortened, or even if these latter subjects could in part be learnt at first broadly as part of biology and later in more special relation to surgical and medical needs; if the work of the special hospital departments could be learnt rather in a general than in a special way—probably no extension of the present period of general medical education would be needed. Indeed room could be found for the inclusion of instruction in the elements of normal psychology, psychopathology, and psychotherapy.

Other Conclusions

Differentiation in teaching and examination between students of moderate and brilliant intelligence, at all events in regard to preclinical studies, appears on psychological grounds likewise much to be desired. For the pass-man a knowledge of fewer facts of professional unimportance should be expected, even if he enter for one of the present diploma examinations. A more definite medical discipline or universe must be evolved. The medical student's teachers need to be more stringently selected on the basis of their ability to teach. And finally, effort should be made to bring his medical, surgical, laboratory, and clinical research teachers—and the subjects which they teach—into closer relation with one another.

These, to a medically qualified psychologist, appear to be the most urgent needs for reform in current medical education.

THE USE OF 3:5-DIIODOTHYRONINE IN THE TREATMENT OF MYXŒDEMA

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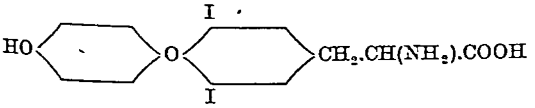
IT is well known that thyroxine is of little therapeutic value as compared with dried thyroid gland, since the former substance only exhibits its full effect when administered by injection. The fact that thyroid gland is physiologically active when given by mouth shows that the failure of thyroxine to act after oral administration is not due to the destructive action of the alimentary enzymes. It is rather to be supposed that the extreme insolubility of pure thyroxine in the free condition prevents its absorption from the gut. This view is supported by the fact that a relatively simple peptide containing thyroxine which can be derived by the enzymic degradation of thyreoglobulin [1] is fully as active when given by mouth as an amount of thyroid gland containing the same quantity of iodine.

If therefore a means could be devised of rendering thyroxine water-soluble a product might be obtained which would be of therapeutic value. Some attempts were made a few years ago [2] to achieve this end by the synthesis of certain peptides and other derivatives of thyroxine which it was hoped might satisfy the required conditions. These attempts failed, largely because of the technical difficulties which made it impracticable to introduce more than the simplest amino-acid or other residues into the thyroxine molecule; the simple derivatives of thyroxine which were obtained did not differ markedly in physical properties from the parent substance.

On renewed consideration of the problem recently it was recollected that in the course of his investigation of the physiological properties of thyroxine and its derivatives Gaddum [3] had observed that 3 : 5-diiodothyronine—



$$HO\text{-}C_6H_4\text{-}O\text{-}C_6H_2I_2\text{-}CH_2.CH(NH_2).COOH$$

exhibited a significant degree of thyroid-like activity. When tested by the acceleration of metamorphosis of tadpoles, the ratio of the activities of thyroxine and 3 : 5-diiodothyronine was approximately 15 : 1, and when tested by the effect on the oxygen consumption of rats the ratio was about 40 : 1. In the latter experiments both substances were administered by subcutaneous injection.

The solubility in water of 3 : 5-diiodothyronine in the free condition, although low, is considerably greater than that of thyroxine, and this difference between the two compounds is still more marked in the case of their salts both with acids and alkalis. It seemed likely therefore that 3 : 5-diiodothyronine would be correspondingly more readily absorbed than thyroxine, in which case it might constitute a valuable therapeutic substitute for thyroxine or thyroid gland.

The Clinical Investigation

The object of the present note is to provide experimental evidence that 3 : 5-diiodothyronine can in fact be used successfully for the relief of the symptoms of myxœdema in man; moreover, it exhibits its action with a high degree of regularity when given by mouth.

Six cases have been studied, the investigation being carried out on the following lines.

Before treatment all drugs were withdrawn and the patients allowed to rest in bed until the basal metabolic rate had reached a steady level. The metabolism was determined by the Douglas bag method, using the Haldane apparatus for gas analysis. The drug was administered daily by mouth in solution as the disodium salt made up in the following manner: 500 mg. of 3 : 5-diiodothyronine were dissolved in 19·0 c.cm. of N/10 sodium hydroxide with the addition of a little water, the mixture being heated until dissolution was complete. The solution was then diluted with distilled water so as to contain 50 mg. of diiodothyronine in ℥ i. This solution was given by mouth after food. The standard dose was 50 mg. daily. This dose was well tolerated, and with continued administration over periods of two to three weeks no toxic effects were observed. A larger dose of 75 mg. given in one case was equally devoid of toxic effect. In one case the drug was given in pill form with less satisfactory results (see notes, Case 4).

CASE RECORDS

CASE 1.—Female, aged 67. In 1907 she was attending St. Bartholomew's Hospital as an out-patient. The clinical picture was that of myxœdema; a cold dry skin, slow speech, baggy eyes, and dry mouth. The heart was enlarged. She was treated with thyroid gland as an out-patient. In 1910 glycosuria occurred temporarily, but ceased on discontinuing the thyroid for two weeks. In 1928 she was treated medically for gastric ulcer. There was a noticeable change in her condition when any attempt was made to reduce the amount of thyroid she was taking.

On April 28th, 1933, she was admitted to University College Hospital, thyroid treatment having been discontinued three weeks previously. Clinically there were no very obvious signs of myxœdema, but the basal metabolic rate (B.M.R.) was found to vary between −20 and −22 per cent. From May 16th to 24th she was given 50 mg. of diiodothyronine daily, at the end of which time the B.M.R. had risen from −22 to +2 per cent., and there was a slight rise in the resting pulse-rate from 55 to 67 (Fig. 1). There was no appreciable fall in weight in this case. The drug was discontinued and in six days' time the B.M.R. had fallen to −15 per cent. and the pulse to 55. The patient, who had been feeling better during treatment, now complained of feeling worse, and was dull and depressed. She was unaware that the drug had been withdrawn, since flavoured water was substituted. On May 29th she was put back on 50 mg. diiodothyronine daily, and in 12 days the B.M.R. had risen to +8 per cent. (Fig. 1) and the resting pulse-rate to 64. Her general condition was much improved. This patient showed no change in weight during treatment; her initial weight, however, was low (55·5 kg.).

CASE 2.—Female, aged 45, also attending St. Bartholomew's Hospital as an out-patient. A diagnosis of myxœdema was made in 1921, and treatment started with thyroid grs. 4 t.d.s., and continued with smaller doses. Her original complaint of menorrhagia was treated by X ray irradiation of the pelvic organs. From time to time during treatment she suffered from headaches and giddiness and falling hair. For months at a time she was quite well, but her condition appeared to fluctuate very much in spite of treatment. On August 11th, 1933, she was admitted to University College Hospital, treatment with

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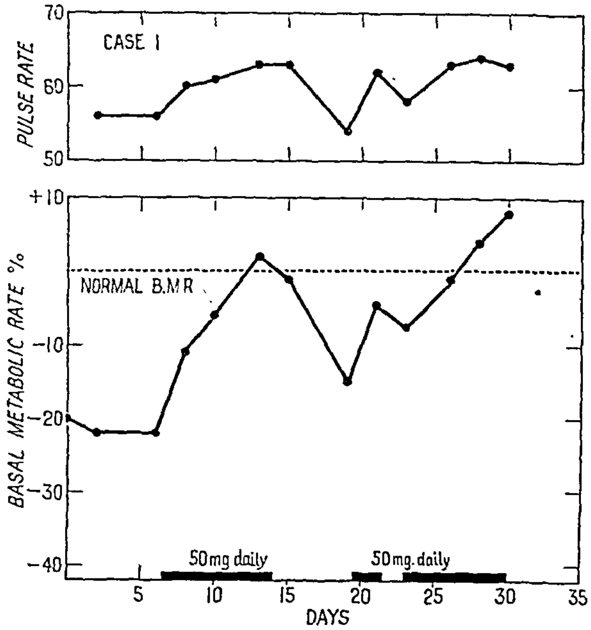

FIG. 1 (Case 1).—C[illegible] in pulse-rate and basal metabolic rate [illegible] 3 : 5-diiodothyronine. The periods of [illegible] daily) are indicated by the black ar[illegible]

thyroid having been discontinued four weeks previously. She had gained 1 st. in weight since the thyroid was discontinued, and her B.M.R. varied between —23 and —24 per cent. From August 20th to Sept. 1st she was given 50 mg. diiodothyronine daily. Nine days after starting treatment the B.M.R. had risen from —23 to —9 per cent. (Fig. 2), and the resting pulse-rate had increased from 62 to 75. By the end of this period her weight had fallen over 2 kg. She was then sent home for a week on a daily dose of 50 mg. of the drug, and at the end of the week re-admitted when her B.M.R. was found to be —9 per cent. (Fig. 2) and her pulse 62.

CASE 3.—Male, aged 61. Was in normal health until ten years ago when he began to complain of lassitude, weakness of his legs and arms, and pains in his limbs. During the last five years his face and eyelids had been swollen.

Clinically the skin was dry and scaly, more especially on the extensor aspects of the limbs; the eyelids were swollen, the eyebrows and hair scanty, and the skin of the face thickened. His voice was gruff and speech slow. Impairment of memory was not marked. His weight was 89 kg. The systolic blood pressure was 160 mm. Hg, the urine contained a trace of albumin, and the urea-concentration test indicated a slight impairment of renal function. Blood-urea was 30 mg. per 100 c.cm. There was no œdema of the legs. The B.M.R. varied between —26 and —29 per cent. On the basis of these findings, a diagnosis of myxœdema with mild chronic nephritis was made.

From August 26th to Sept. 4th, 1933, he was given 50 mg. diiodothyronine daily. This was followed by an immediate rise in metabolism, and after nine days the B.M.R. had risen from —26 to —10 per cent. (Fig. 2), the pulse from 60 to 68, and there was a loss of weight of 4·5 kg. The dose was then increased to 75 mg. daily, and after a further seven days the B.M.R. had risen to —5 per cent., and there was a further fall in weight of 3 kg. This large fall in weight which pursued a steady course and amounted to 7·5 kg. in 16 days was an especial feature of this case. No toxic symptoms were observed.

CASE 4.—Female, aged 65. She was originally admitted to University College Hospital in 1922 as a severe case of Graves's disease with fibrillation. Her condition did not respond to medical treatment, so ligation of the superior thyroid arteries was performed, and four months later a right hemithyroidectomy was done. After a slow recovery the condition remained improved until 1924, when the symptoms returned and the left lobe of the thyroid was found to be enlarged. In 1925 the symptoms had increased in severity and the isthmus and lower left pole of the thyroid were removed at operation. Her condition again improved and remained fair for five years. For the last two years the sight had been failing with the development of bilateral cataract and the general condition had been poor, with loss of taste and appetite, weakness, and undue sensitivity to cold.

Clinically the skin was dry and cold, that of the face being thickened and yellow in colour, thickened eyelids were associated with a residual bilateral exophthalmos. Her speech was slow and grating in tone. She was poorly nourished and underweight. The heart was fibrillating with a pulse-rate in the neighbourhood of 90. Radiography of the chest showed an enlarged heart. The B.M.R. varied between —30 and —32 per cent. On the history and these findings a diagnosis of post-operative myxœdema was made.

From Oct. 3rd, 1933, she was given 50 mg. of diiodothyronine daily and by the 11th the basal metabolism had

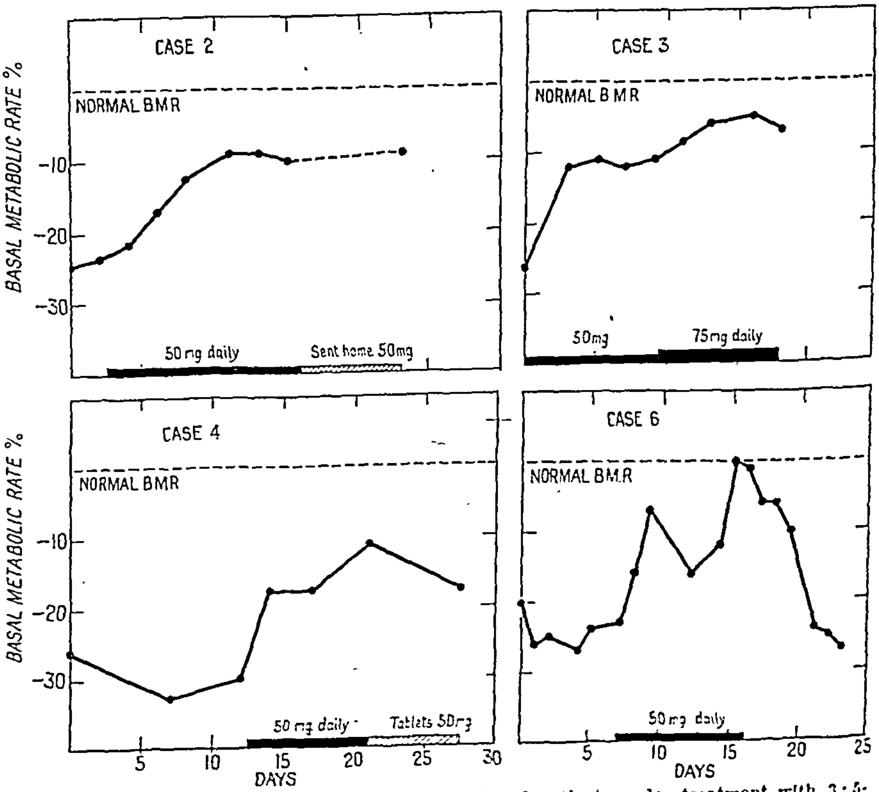

FIG. 2 (Cases 2, 3, 4, and 6).—Basal metabolic rate of patients under treatment with 3 : 5-diiodothyronine in doses of 50 and 75 mg. daily. The cross-hatched areas indicate treatment at home in Case 2 and with tablets in Case 4.

risen from −30 to −11 per cent. (Fig. 2) with a fall in weight of 2·5 kg. The pulse-rate taken two-hourly in the ward increased at first, fluctuating at times between 90 and 120, but later settled to 80 to 100, which was the rate before starting treatment. Her condition was much improved; the sense of taste returned and her appetite increased and she was much brighter. On Oct. 12th she was put on digitalis and the method of administration of the diiodothyronine was changed. It was now given in pill form made up with a lactose base; one pill containing 25 mg. diiodothyronine was given twice a day after food.

As will be seen from the chart (Fig. 2) the drug given in the solid form failed to maintain its full effect; since the general condition of the patient was unsatisfactory, however, the failure may have been due to other causes. More work is necessary before it can be concluded that the administration of the drug in the form of a solution is essential.

CASE 5.—Female, aged 67. Enjoyed normal health until 1916, when she was noticed to be becoming dull mentally and disinclined for effort. She was definitely diagnosed as a case of myxœdema in 1920, and during the next few years took thyroid at very irregular intervals. In January, 1926, she was admitted to the Royal Infirmary, Edinburgh, on account of lack of energy and obesity. The clinical picture was typically that of an advanced myxœdema with a B.M.R. of −46 per cent., a harsh dry skin, slow pulse, supraclavicular pads of fat, and an increased sugar tolerance. The only feature not absolutely typical was the hair, which has never been characteristically dry and scanty. Ever since this time she has been in and out of hospital, as she has not been sufficiently intelligent to regulate her dose of thyroid efficiently, and also complained that it gave her palpitation. On each readmission the B.M.R. had fallen to between −33 and −45 per cent. On two occasions she has been given large intravenous doses of thyroxine, which raised the B.M.R. rapidly over the normal level, but were accompanied by somewhat severe symptoms of diarrhœa, palpitation, headache, and nausea. Approximately grs. 6 of thyroid a day were found necessary to maintain her B.M.R. at a normal level. This dosage she professed herself unable to take without distressing symptoms of palpitation.

Her last admission was on April 26th, 1933, when she was found to be in her usual myxœdematous condition, with a B.M.R. varying between −35 and −40 per cent. From May 2nd she was given each day 50 mg. of 3:5-diiodothyronine orally. Six days after starting this treatment her B.M.R. had risen from −37 to −9 per cent. (Fig. 3), and her weight had fallen considerably. This increase of metabolism was accompanied by none of the unpleasant symptoms previously experienced with thyroxine, and to a less extent with small doses of ordinary thyroid extract. Although a similar dose of diiodothyronine was persisted with for a fortnight longer the patient's B.M.R. never showed any tendency to rise unduly, remaining just on the lower side of normality. Her weight, however, continued to fall satisfactorily, and her mentality was much brighter. The pulse-rate rose slightly from an average of 68 to one of 78. A fortnight after the drug was discontinued the B.M.R. had again fallen to −38 per cent., the weight, in spite of the diet being kept constant as regards caloric intake, was rising steadily, and her general myxœdematous symptoms, which had been apparently alleviated by the drug, had reappeared.

CASE 6.—Female, aged 43. Had enjoyed normal health until three or four years before admission, when she was noticed to be putting on weight and to be becoming tired, lethargic, and dull mentally. On examination at the Royal Infirmary of Edinburgh six months before the present admission she was found to be suffering from typical myxœdema. She was much overweight, with large supraclavicular pads of fat, a dry, yellowish coarse skin, slow cerebration and slow speech, a slow pulse, and a B.M.R. in the neighbourhood of −30 per cent. It was found necessary to administer grs. 4–5 thyroid a day to maintain her B.M.R. at a normal level.

Previous to readmission, on June 23rd, 1933, she had been taking thyroid, and some days were allowed to elapse for the effect of this to wear off. A daily oral dose of 50 mg. of diiodothyronine was begun on July 3rd. For some days before this her B.M.R. had been varying from −24 to −27 per cent. Eight days after beginning the medication her B.M.R. was normal; the diiodothyronine was stopped on July 12th, when the B.M.R. returned to its initial low reading of −27 per cent. in the space of seven days (Fig. 2). Coincidentally with the increase of metabolic rate some fall in weight occurred, and the pulse-rate was increased from an average of 65 to an average of 79. The weight began to increase and the pulse-rate to fall within four days of the drug being discontinued.

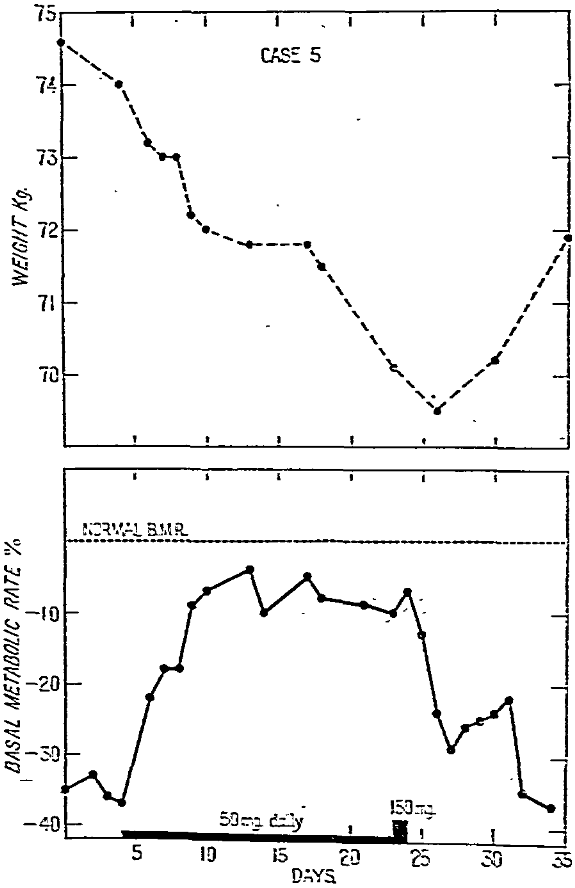

FIG. 3 (Case 5).—Weight and B.M.R. under treatment.

During the whole time that the patient was receiving the drug she complained of no unpleasant symptoms, and indeed felt considerably better and was much brighter.

ELECTROCARDIOGRAPHIC OBSERVATIONS

Abnormalities in the electrocardiogram which disappear on treatment with thyroid are very common in myxœdema. They were present in 12 out of 19 cases examined by Willius and Haines.[4] White[5] states that absence or inversion of the T wave in all leads is pathognomonic of the disease and believes that alterations in the curves are valuable in indicating the progress of thyroid therapy. We are indebted to Dr. E. J. Wayne for the following note on two of our cases.

Two of the cases studied in the present investigation have had electrocardiograms taken before and after treatment with diiodothyronine. In one of these (Case 3) the T wave in all three leads was isoelectric before treatment (B.M.R. −27 per cent.). After 16 days' treatment with the drug, definite positive T waves were present in leads I and II and a negative T wave in lead III (B.M.R. −5 per cent.).

In the second case (Case 2) isoelectric T waves were also present in all leads before treatment (B.M.R. −25 per cent.); after 13 days' treatment (B.M.R. − 9 per cent.) the curves showed clear positive T waves in leads I and II. In lead III the T wave remained isoelectric.

Discussion

It is clear from the results described above that 3 : 5-diiodothyronine, in doses of 50–75 mg. daily, is capable of relieving the symptoms of a high grade of myxœdema. Under such treatment the basal metabolic rate is restored to and maintained at an approximately normal level; at the same time there is usually a considerable loss of weight and the pulse-rate is slightly raised. Toxic symptoms have never been observed. The diagrams in Figs. 1 and 3 are indeed very similar to those which would be obtained in response to the daily injection of 1 mg. of thyroxine, and there seems no reason to doubt that the 3 : 5-diiodothyronine is acting as a true substitute for the thyroid hormone.

The reason for the qualitative similarity between the actions of thyroxine and 3 : 5-diiodothyronine is not perfectly clear and need not be discussed here; an obvious possibility, however, is that a part of the 3 : 5-diiodothyronine becomes converted into thyroxine itself, a change which only requires the easy introduction of the iodine atoms into the 3′ : 5′-positions.

3 : 5-diiodothyronine is a compound which is readily obtainable by a synthetic method in a state of purity; it is, in fact, the penultimate product in the synthetic preparation of thyroxine. Moreover, it is perfectly stable. The advantages of such a product for therapeutic purposes over a biological material such as thyroid gland are sufficiently evident. It is true that the standardisation of thyroid gland has recently been improved,[6] but the accuracy of this standardisation cannot be said to be securely established.[7] Further, with biological material the uncertain factor of deterioration during storage cannot be entirely eliminated. 3 : 5-diiodothyronine, on the other hand, can be standardised with perfect accuracy by its analysis and physical constants, whilst it appears from the cases described above to exhibit its physiological activity with a remarkable degree of constancy.

It is hoped, therefore, if further experience should substantiate the results recorded above, that 3 : 5-diiodothyronine may prove to be a valuable substitute for thyroid gland in all cases where administration of the latter is indicated.

In conclusion, we wish to express our thanks to Dr. R. Hilton, of St. Bartholomew's Hospital, whose coöperation made possible the investigation of two of the cases described.

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A NORTHERN EYE HOSPITAL.—A new wing of the Newcastle, Northumberland, and Durham Eye Hospital at Newcastle-upon-Tyne was opened recently by the Duchess of Northumberland.

PRIMARY MENINGITIS DUE TO THE GÄRTNER BACILLUS

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THE *B. enteritidis* Gärtner, belonging to the salmonella group of organisms, is one of the causes of acute gastro-enteritis. It has been reported that this bacillus may also be associated with disease in other organs of the human body. Gregg and Hayes[7] recovered the organism from the urine in a case of continued fever following a gunshot wound in the chest; Rosher and Wilson[12] described a sporadic case of fever that ran a typical typhoid course, but was shown from the agglutination of the patient's serum to be due to *B. enteritidis*; Dean[4] isolated the bacillus from the gall-bladder, from one of the gall-stones, and from the fæces in a chronic case of cholelithiasis. A few authors[3] [8–16] have recorded cases of infection of the meninges with *B. enteritidis*, but like cases of meningitis due to allied organisms —e.g., *B. paratyphosus* B[1] [2] Morgan's No. 1 bacillus[5] —they are of sufficiently infrequent occurrence to warrant the publication of the following case, which would appear to fall into the group of primary and uncomplicated meningitis due to this organism, of which we have been able to find less than a dozen recorded.

CASE-HISTORY

Joan X. was aged 9 weeks when first seen on July 19th, 1933, and weighed 5 lb. 12 oz. She was one of twins born about a fortnight before the calculated date. Each weighed about 4¾ lb. at birth. They were stated to be jaundiced at birth, the jaundice taking about three weeks to disappear. The mother quite early developed a breast abscess, and the babies were fed with Ostermilk in quantities fully adequate in food value and fluid content. A week before she was first seen the infant was said to weigh 6½ lb.—her highest recorded weight. Her story before admission was as follows:

> Nine days previously she had become irritable and, according to the mother, was constantly straining as though to pass a stool, although she only continued her normal habit of one or two yellow motions daily. She continued to take her normal feeds without vomiting until the fifth day of illness when she vomited once and began two days of diarrhœa. For these two days she had four foul-smelling brown frothy motions a day. On the seventh day she vomited again once only. On the evening of the eighth day she began to have frequent twitchings of the mouth and clonic movements of the right arm and leg. Occasionally the eyes were deviated upwards and to the right.

On admission the rectal temperature was 100·4° F., pulse 140, respiration 50. The child was toxic and markedly dehydrated. The chest, heart, abdomen (including umbilicus), throat, and drumheads were normal. There were no enlarged glands. There was an occasional divergent squint. Head flexion was resented, but there was no neck rigidity. Kernig's sign was suggestive though the spasm was by no means marked. The fontanelle was somewhat full but quite easily compressible when the child was not crying. Shortly after admission a small normal stool was passed. A 5¼-oz. subcutaneous saline was immediately given. As the child would not suck, œsophageal feeds were commenced. Later the same day a 2-oz. blood transfusion from the father was given after satisfactory cross-grouping. By evening there was considerable improvement and, although very restless, dehydration was much less marked. Another formed stool was passed. The later course was as follows:

July 20th. Child now neither dehydrated nor collapsed, but very restless and still twitching in all limbs. The fontanelle was now definitely full and bulging. On lumbar puncture 2 c.cm of purulent fluid were withdrawn under increased pressure. Examination showed many polymorphonuclear leucocytes and gram-negative extra-cellular bacilli, so no serum was given. Œsophageal feeds were continued 2 oz. three-hourly. The same evening much twitching but no rigidity. Lumbar puncture repeated but little obtained. Cisterna puncture was more successful and 10 c.cm. were withdrawn. It was not possible to wash through with saline from above downwards.

July 21st. Improved appearance and colour, though twitching continued. Increased bulging of the fontanelle during the day coincided with a deterioration in the general condition. The temperature had risen from 102° to 105° F., and the pulse to 170. The respiration had continued at about 70 to the minute. Lumbar puncture the same afternoon was dry, but 12 c.cm were obtained from the cisterna. The child was much worse and the abdomen distended. In view of the obvious prognosis, ventricular drainage was not attempted.

July 22nd. Increasing collapse and dehydration. Temperature was down to 99° F., pulse 180, respirations 90. Very little twitching, no rigidity, fontanelle slack.

Death occurred at 7 P.M. on the twelfth day of illness.

AUTOPSY

There was a general emaciation of the body and some cloudy swelling of the kidney and liver, together with slight fleshy enlargement of the mesenteric glands. The spleen—rather diffluent—was enlarged twice its natural size, and showed a pallid swelling of the pulp and an increase in the size of the Malpighian bodies. The intestines were macroscopically normal. The specific findings were confined to the brain and meninges.

The most striking feature in the appearance of the brain was the general œdema of the brain substance without "softening." McNee [9] has recorded a similar observation. Smith [13] has found hyperæmia of the brain superficially, and the ventricles dilated with blood stained purulent fluid. We noticed that thick yellow fibrinous pus covered the base of the brain, distending the basal cisternæ and extending along the fissures towards the vertex on each side. The convolutions were considerably flattened and the sulci partially obliterated as a result of the general rise in pressure. A basal pressure cone was evident. On section of the brain this suppurative meningitis was seen to be complicated by similar infection of the ventricles. These were greatly dilated. In no part of the brain was there any evidence of hæmorrhagic necrosis or other softening than that accompanying the œdema.

Microscopical section of the brain and meninges showed a polymorphonuclear meningitis with cortical œdema and softening. Here and there scattered in the substance of the exudate were small groups of gram-negative coliform bacilli. There was no encephalitis, nor any vascular thrombosis.

Sections of spleen, mesenteric lymph gland, and kidney were examined microscopically, but the changes in these organs, even the active mononucleosis of the spleen, were not thought to be specific in any way.

An attempt was made to trace the source of the infection. Some of the bright yellow fæces were taken for cultural examination on nutrose agar, but only "red" colonies were obtained. There was no evidence of inflammation of the intestines, nor any other abnormality to suggest an enteric infection. This agreed with the post-mortem findings in the cases recorded by Pesch,[11] by Smith,[13] and by Symmers and Wilson.[15]

BACTERIOLOGY

The cerebro-spinal fluid obtained at lumbar puncture on the day after admission was turbid, slightly yellow in colour, and showed a thick deposit at the bottom of the tube. The turbidity was mainly due to the presence of vast numbers of organisms which were easily detected in the counting chamber. The chemistry of the fluid was as follows:

Of a total of approximately 2000 cells per c.mm. 10 per cent. were red blood-cells and 90 per cent. were a mixture of polymorphonuclear leucocytes and pus cells. There was a high protein content, 0·5 per cent., or 25 times normal. The chloride content was definitely reduced to the very low figure of 505 mg. per 100 c.cm. No reducing bodies were present by Fehling's method.

No gram-negative cocci but many gram-negative bacilli of coliform type were present in direct smears. The bacillus readily grew on ordinary culture media.

The growth on agar and blood-agar slopes was entire with thin margins, greyish-white in colour, and smooth in consistence. It was abundant and reached its maximum in 48 hours. Small, smooth, discrete colonies were obtained on agar and blood-agar plates. In broth there was a heavy turbidity with a granular sediment. A luxuriant growth was obtained on a gelatin slope culture; a gelatin stab culture showed growth along the line of inoculation, and also on the surface after a few days. Cultural growth was due to a gram-negative bacillus, not unlike *B. typhosus*, with filamentous forms in broth. On nutrose agar, small "blue" colonies appeared on the surface of the plate; they remained unchanged at the end of 72 hours.

The biochemical reactions of this bacillus were investigated, and it was found that dextrose, galactose, maltose, and mannite were fermented, that faint acid but no gas production was obtained with dextrin, and that lactose, saccharose, glycerin, and inulin were unaffected. With litmus milk alkaline production was slow but no clot was formed. Gelatin was not liquefied and no indol was produced. The bacillus was actively motile. No change was noticed in these reactions at the end of 12 days. A five-hour suspension of the bacillus showed the following reactions with agglutinating sera:

Negative agglutination with *B. typhosus*, *B. paratyphosus* A, *and B. aertrycke* (Oxford); partial agglutination with 1:200 *B. paratyphosus* B; negative agglutination with dilutions higher than 1:4000 *B. paratyphosus* C (suipestifer, Oxford) and 1:8000 composite salmonella group (Oxford); positive agglutination to the limit of titre (1:3200) *B. enteritidis* Gärtner (Burroughs and Wellcome); and complete agglutination with a dilution of 1:32,000 (partial with 1:64,000) *B. enteritidis* Gärtner (Oxford).

Comparative tests with the bacillus were carried out with a stock culture of *B. enteritidis* Gärtner, with which the bacillus showed agreement in all characteristics.

EXPERIMENTAL

A rabbit inoculated intraperitoneally with 2 c.cm. of a 48-hour broth culture died in 72 hours, but a guinea-pig inoculated with 1 c.cm. lived until the fifth day of infection. Claudius [3] claimed virulence for a guinea-pig within a few days, and found abundant gram-negative bacilli in the heart's blood. We found that the post-mortem appearance of the rabbit was distinctive of an acute infection, and showed an extensive hæmorrhagic peritonitis with matting together of the intestines. There was also a purulent pleurisy with pericarditis and a slight enlargement of the spleen. Examination of the interior of a piece of intestine showed no suggestion of superficial ulceration of the mucous membrane. There was no distinctive feature in the post-mortem appearance of the guinea-pig. Control animals inoculated with stock *B. enteritidis* died after 48 hours. No hæmorrhagic peritonitis was seen in the control rabbit, and nothing distinctive was noticed in the post-mortem appearance of either control animal. Gram-negative bacilli were recovered from the heart's blood and peritoneal exudate of the animals and the controls, also from the spleen of the guinea-pig in the former. They showed the same morphological and cultural characteristics as the original bacillus in every case. The biochemical reactions were identical. Similar agglutination reactions were obtained: complete with 1:8000, negative with 1:16,000 and 1:32,000, and partial with 1:64,000 of Gärtner agglutinating serum.

OTHER RECORDED CASES

Those cases of meningitis which have been recorded in the literature as being due to *B. enteritidis* Gärtner can be divided into two groups: a primary group, where isolation of the bacillus has been pure; and a secondary group where a mixed infection has occurred. Examples of the latter are afforded by the two cases published by Opitz.[10]

The first, a rachitic infant of 18 months, came under treatment for a pneumococcal empyema and subsequently developed a fatal meningitis. Strains of *B. enteritidis*, pathogenic for rabbits, agglutinated by Gärtner serum to its maximum titre (1:1600) were obtained from blood culture on two occasions during life, but only pneumococci were isolated from the cerebro-spinal fluid. *B. enteritidis* was however recovered from the spleen at post-mortem.

The second, a badly nourished child of 15 months, who had previously had an attack of broncho-pneumonia, was admitted to hospital with a history of three weeks fever and convulsions. At the first lumbar puncture meningococci alone were isolated, but on the last day but one before death, in addition to intracellular and extracellular meningococci, many small gram-negative rods were detected on an examination of a direct film of the cerebro-spinal fluid. By cultural methods no meningococci were grown; only *B. enteritidis* colonies, which were proved to be such by animal inoculation and agglutination to titre with Gärtner serum. Although Opitz failed to find the source of infection in these cases, he claimed that they were due to real infection with *B. enteritidis*, yet the signs and symptoms in the first case could have been ascribed to the pneumococci and in the second case to the meningococci.

The primary group mentioned above is represented by the case of Stuart and Krikorian,[14] who in 1926 identified *B. enteritidis* by fermentation and agglutination reactions in a fatal case of meningitis in a boy of 11 years, occurring during a typhoid epidemic in Jerusalem. The cases of Pesch [11] in the same year and of Smith [13] in 1921 seem to have been cases of enteritis complicated by meningitis; that of Claudius [3] in 1926 primarily a *B. coli* pyelonephritis followed by a pyæmia and terminating in a fatal meningitis. Gram-negative bacilli were grown on culture of the cerebro-spinal fluid from these patients; the bacilli were agglutinated to the limit of the titre of Gärtner serum employed (1:5000 in the case of Claudius [3] and 1:6400 in the case of Pesch [11]).

COMMENTS

It is evident from the clinical and bacteriological findings that this was a case of primary meningitis due to *B. enteritidis* Gärtner. No gastro-enteritis was shown to have been present. The patient was the weaker of twins and the other remained healthy. No case of similar infection has been reported in the family. The source of infection has not been found.

It should be noted that the chloride content of the cerebro-spinal fluid was greatly below normal in this case of meningitis; the very low figure of 505 mg. per 100 c.cm.[6] suggested at once the diagnosis of tuberculous meningitis, but no tubercle bacilli were found, and all other findings supported a pyogenic organism as the infecting agent.

The case of the infant described ran a course parallel with others reported in the literature and ended fatally.

Our acknowledgments are due to Dr. H. C. Cameron for permission to publish the case; to Prof. John Eyre, in whose department at Guy's Hospital the investigations were made; and to Dr. C. K. Simpson who conducted the autopsy.

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CONGENITAL STEATORRHŒA

BY E. A. COCKAYNE, D.M. OXF., F.R.C.P. LOND.

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THOUGH the following case of congenital steatorrhœa was incompletely investigated, Sir Archibald Garrod considers that it should be placed on record on account of the great rarity of the condition.

The patient, a girl, was born in 1921, of English parents unrelated by blood. When she first came to the Hospital for Sick Children, Great Ormond-street, in August, 1923, at the age of 1 year and 10 months, she was the only child, but her father told me in June, 1933, that two more children were born subsequently, a boy, aged 7 years, and a girl, aged 14 months, both of whom are normal. She was fed on Glaxo for the first ten months and was constipated, but after she was given a mixed diet the stools became loose. She began to walk at the age of 1 year and walked well at 1 year and 8 months. In December her mother brought a stool, which was shown to me by my clinical assistant. It was like a pat of butter, yellow and semi-transparent, and had a strong rancid smell. In answer to my questions the mother said that the stools had resembled melted butter ever since her change of diet at 10 months, and that oily fluid was passed both with the motions and with flatus. The infant weighed 17 lb. on August 20th, and 19 lb. on Oct. 22nd, but after that her weight remained stationary until Dec. 3rd, though her general health appeared to be good. In order to have the stools analysed with the child on diets containing various known quantities of fat, the parents let me take her into the hospital and Dr. Robert Hutchison kindly lent me a cot, but before these and other investigations could be carried out she was taken home again.

She was intelligent and, though small for her age, she was active and well-nourished with a good covering of subcutaneous fat. The liver was easily palpable, but no other abnormality was discovered, and the urine contained neither sugar nor albumin. During her stay in the hospital some of her stools were chocolate-coloured, others were typical "butter stools," and all had a rancid odour. While she was on an ordinary diet, the fat content of which was not accurately known, the following analyses were made:—

Date in Dec., 1923.	Fat per cent.	Fatty acid.	Soap.	Neutral fat.
4th	46·43	39·8	..	60·2
6th	72·28	58·56	..	41·44
10th	51·18	47·47	2·52	50·01
11th	43·50	53·09	3·43	43·48
12th	44·90	57·35	..	42·65

All the stools had a strong odour of butyric acid. No muscle-fibres were found in the only stool examined, though she was on a diet containing meat. The blood and urine showed a low diastase value, but the exact figures were not reported. Loewi's test was positive: the left pupil dilated after two drops of adrenaline (1 in 1000) were instilled. The lævulose-tolerance test gave the following result: At 10.20 A.M., before the lævulose was given, the blood-sugar was 0·109 per cent. Lævulose (10 g.) was given at 10.20 and the blood-sugar was 0·109 at 10.50, 0·107 at 11.20, 0·146 at 11.50, 0·146 at 12.20, and 0·199 at 2.40.

The white blood-cells numbered 6250 per c.mm., polymorphonuclears 18 per cent., small lymphocytes 73 per cent., large lymphocytes 7 per cent., mononuclears 1·5 per cent., eosinophils none seen, basophils 0·5 per cent. The child died rather suddenly of broncho-pneumonia with an extensive purpuric eruption in March, 1924.

OTHER RECORDED CASES

Only three families in which this error of metabolism has appeared have been recorded. In the sibship reported by Hurtley and Garrod[1] two boys were affected and one boy and two girls were normal, and the parents were first cousins. In that reported by Miller and Perkins[2] the third child, a boy, was affected; the first and second, a girl and a boy, were normal, and the parents were not consanguineous. In the sibship reported by Soecknick and Thoenes,[3] all the three children had steatorrhœa; the first and third were boys, the second a girl, and afterwards there was a miscarriage. The parents were first cousins. In all the patients the stools were abnormal from the beginning and "butter stools" were noticed at an early age, and though there was some difference in the way in which fat was utilised on low and high fat diets by members of the different families, fat absorption was imperfect in all of them. Miller and Perkins found no failure to absorb protein in their patient. In Hurtley and Garrod's patient protein absorption was normal and there were no undigested meat-fibres in the fæces after a meal of beef-steak, and in my patient also there were no undigested muscle-fibres after a meal containing meat. In the patient investigated by Soecknick and Thoenes, however, both fat and protein were imperfectly absorbed, though carbohydrates were fully utilised. The diastase in the urine was not excessive in any of the patients. There was one difference between Hurtley and Garrod's patient and mine, for in theirs Loewi's test was negative, while in mine it was positive.

The cause of the deficient absorption of fats or fats and proteins is obscure. In the case of fats, pancreon caused the splitting of a much larger amount without any corresponding improvement in their absorption, so that the defective splitting of the fats is not the causative factor. In spite of the careful investigation of three cases the nature of this error of metabolism is still unknown.

In none of the children with steatorrhœa was there any great lack of subcutaneous fat, and their general health appeared to be good. The elder of the two brothers seen by Hurtley and Garrod appeared to have suffered no ill-effects from the disorder at the age of 15 years. On the other hand, his younger brother died of measles and broncho-pneumonia, Miller and Perkins's patient died of broncho-pneumonia after the extraction of carious teeth, one of Soecknick and Thoenes's patients died of hydrocephalus and another died of broncho-pneumonia, and my patient also died of broncho-pneumonia. The high mortality and the frequency with which broncho-pneumonia was the cause of death may be only a coincidence, or there may be a real connexion between the error of metabolism and the liability to a fatal infection of the respiratory organs. Which explanation is the true one can only be decided when the life-histories of many more children with the disorder have been published.

The two additional families recorded since Garrod published his "Inborn Errors of Metabolism" support the view he then put forward, that congenital steatorrhœa is a Mendelian recessive affecting males more often than females. The ratio of males to females is now 5 : 2. Of the sibships 50 per cent. are the result of marriages between first cousins, but a more accurate estimate is obtained by taking the percentage of affected children arising from consanguineous marriages, and of these 71·4 per cent. are the offspring of first cousins. If this high percentage is maintained it will prove that the disorder is much rarer than xeroderma pigmentosum, ichthyosis congenita, and alcaptonuria, though in all probability there are other autosomal recessives, as rare or even rarer, which still await recognition.

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BLOOD PRESSURE AND SUBARACHNOID HÆMORRHAGE

BY M. C. ANDREWS, M.D. CAMB.

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LUMBAR puncture is the accepted treatment of subarachnoid hæmorrhage. But when and how often to puncture few agree. Practice varies. One physician will wait until the necessity to puncture is forced on him; another will act immediately; others will puncture daily as a routine. No principle has yet been enunciated.

The reasons for puncturing are two. First, to confirm the diagnosis, and secondly, to keep the extracerebral pressure below that of the blood in the intracranial arteries. This second aim indicates the guiding principle which has been almost completely overlooked—blood pressure.

It is generally agreed that a temporary rise in blood pressure is the usual cause of the onset of bleeding. But Gale appears to be the only person who has drawn attention to the course of the pressure after the hæmorrhage has begun. How completely a skilled observer may miss the significance of alterations in blood pressure is shown by the following quotation from Forbus:—

> "There was said to have been some elevation of the blood pressure at the time the patient entered the

hospital, only a few hours before death, but one could hardly see enough in the heart to support the idea of chronic hypertension. The elevation of the blood pressure must have been of temporary nature, and under the circumstances an observation none too reliable."

I am convinced that the blood pressure is the most reliable guide to prognosis and treatment. The ideal is to know the blood pressure (1) before the hæmorrhage; (2) after the hæmorrhage has begun; (3) before lumbar puncture; (4) after lumbar puncture; and (5) at frequent intervals subsequently, the frequency being determined by the severity of the case. This was achieved in Case 11. A single reading, unless it is extremely low or extremely high, is of no value at all. Below I have set out the records of cases in which more than one reading was taken.

CASE 1.—Aged 44.

Blood pressure (B.P.) one hour after hæmorrhage	110
B.P. half an hour later	180

Died same evening.

CASE 2 (Doubler and Marlow).—Aged 32.

After lumbar puncture (L.P.), 6½ hours after hæmorrhage	180/118
7½ hours after hæmorrhage .. .. over	300/118

Died 10 hours after hæmorrhage began.

CASE 3 (Green).—Aged 30.

1st day after hæmorrhage, before L.P. ..	170/95
L.P. 1st day.	
3rd day	145/95

Died 14th day.

CASE 4 (Riddoch and Goulden).—Aged 44.

1st day after hæmorrhage, before L.P. ..	140/80
2nd „ „ „ „ „ ..	140/80
10th „ „ „ „ „ ..	140/90
Incontinence of urine began.	
11th day after hæmorrhage, before L.P. ..	170/105
12th „ stupor, stertor, cyanosis; L.P.	
13th „ died.	

CASE 5 (Cubitt).—Aged 57.

2nd day after hæmorrhage, before L.P. Becoming comatose	90/45
3rd day, L.P. Breathing, &c., improved after L.P.	110/75
5th day, after third L.P.	135/90

Operation. Died.

CASE 6.—Aged 53.

2½ hours after hæmorrhage, before L.P. ..	160
3½ „ „ „ „ „ ..	160
4 „ „ „ after „ ..	160
7 „ „ „ „ „ ..	164
25 „ „ „ „ „ ..	150
35 „ „ „ „ „ ..	168
48 „ „ „ „ „ ..	148
72 „ „ „ „ „ ..	158
84 „ „ „ „ „ ..	162
Second L.P.; hypostatic pneumonia.	
92 hours after hæmorrhage, after second L.P.	140
106 „ „ „ „ „	138
126 „ „ „ died of hypostatic pneumonia.	

CASE 7.—Aged 33.

1st day after hæmorrhage, after L.P... ..	140
8th day, after daily L.P. and an epistaxis ..	115

Recovered.

CASE 8.—Aged 42.

Before hæmorrhage	185
1st day after hæmorrhage, before L.P. ..	190/136
8th day	192/128
After medicinal treatment and rest in bed.	
Still in bed	144
Nine months later	195
Since then (?) leakage, hot weather ..	210
After one week in bed	170

CASE 9.—Aged 53.

Lumbar puncture daily.

	A.M.	P.M.		A.M.	P.M.
8th day ..	—	150	13th day ..	126	148
9th „ ..	208	180	14th „ ..	154	126
10th „ ..	178	112	15th „ ..	132	112
11th „ ..	152	118	16th „ ..	120	—
12th „ ..	132	120			

Died from fresh hæmorrhage following lumbar puncture.

CASE 10.—Aged 47.

1st day, within four hours of hæmorrhage; secondary coma; before L.P. ..	200
1st day, after L.P.	192
2nd day, morning	176
„ „ evening	210
3rd day, morning	140
„ „ evening	94

Died.

CASE 11.—Aged 25.

2½ hours after hæmorrhage—

P.M.		A.M.	
11.0	180	12.45	156
11.10	180	1.45	80
11.15	180	2.0	76
11.20	166	2.15	76
Lumbar puncture.		2.30	66
A.M.		2.45	?
12.15	165	3.0	Died

COMMENTS ON THESE CASES

1. *Initial fall due to shock.*—Gale says that immediately after the ictus there is a fall of blood pressure. He offers no exact readings to prove this, though the suggestion is reasonable. Case 1 does not prove the point, but certainly suggests a fall. For a woman of 44, and one who is capable of effecting a rise of 70 mm. in the following half hour, a reading of 110 is low.

2. *Therapeutic rise.*—A reaction follows in which the blood pressure tries to rise more quickly than the intracranial pressure. If it fails, so does the respiratory centre. If it succeeds, there is still a mechanical possibility of continuation of the hæmorrhage.

Case 2 shows a very gallant effort to withstand the rising intracranial pressure in a severe hæmorrhage. In Case 3 the first reading may have been made at the height of the rise. An attempt to return to the normal follows. Case 4 shows a rise to combat a fresh hæmorrhage. The failure of lumbar puncture to save the patient makes one wonder whether the rising blood pressure was not an indication to puncture on the previous day. The value of lumbar puncture is shown by the fifth case. For an old soldier of 57 a pressure of 90 mm. is alarming, and it looks as if the puncture was done just in time to allow the respiratory centre to give the heart more help.

Case 6 shows how the blood pressure can be relied on to indicate the intracranial pressure. The second lumbar puncture was done to confirm the conclusion arrived at from the blood pressure and clinical signs that the patient's deterioration was not due to a fresh hæmorrhage. The fluid drawn off was not under increased pressure and was less blood-stained than the first specimen. This was an unusual case in that the patient died from a cause other than medullary compression.

3. *Fall during recovery.*—The value of the observations in Case 7 is reduced by the epistaxis. They do, however, show the fall of blood pressure which occurs during recovery. Four lumbar punctures had been done between the two readings. Case 8 shows the value of medicinal treatment with prolonged rest in bed even in a case of premature arterio-sclerosis. Relaxation of the treatment and return to normal life probably means a return of high blood pressure.

4. *Terminal fall.*—The last three cases illustrate terminal failure. In Case 9 the process was slow and death was hastened by lumbar puncture. In Case 10 the fall went on for 24 hours; in Case 11 only for four hours. A terminal syndrome may be described, and is well illustrated by Case 11. The medulla is compressed and respiration fails. The temperature rises, perhaps owing to compression of the temperature-regulating area, perhaps owing to secondary hæmorrhages in this area. The heart beat, which has been becoming progressively slower, finally weakens and flickers. The blood pressure falls. When the blood pressure falls without the patient improving the situation is desperate.

DEDUCTIONS

It would be absurd to call the following remarks conclusions. Many more blood-pressure readings are needed, and it is still to be discovered what help can be obtained by attaching a manometer to the lumbar puncture needle. And when that has been done—medicine has no conclusion. But at least we can say that we had no guide to treatment, and now we have one that we may follow, as better than none—the blood pressure. One reading of the sphygmomanometer is almost certainly useless, and may be misleading. But a series of readings throws a flood of light on a dim path.

Among the records of some hundreds of cases of subarachnoid hæmorrhage I find that only two patients died of loss of blood. One of mine, Case 6, died of hypostatic pneumonia. Every other death was caused by medullary compression.

When, therefore, and how often shall we puncture? Immediately, to confirm the diagnosis, and it may be also to relieve the medulla. So long as the patient improves do not puncture again. The blood pressure will fall either immediately or after a temporary rise. But if, after the lumbar puncture, a rise in pressure is accompanied by signs of increasing distress, puncture again—and, if need be, again and again. Puncture before the blood pressure falls.

How much fluid should be taken away each time? Possibly measurement of the pressure of the cerebrospinal fluid may eventually help to solve this problem. In the meantime other observations must guide us. The cause of a subarachnoid hæmorrhage is the inability of the vessel wall to resist the difference between the arterial and the subarachnoid pressures. If the removal of fluid brings the subarachnoid too far below the arterial pressure, an increase in the hæmorrhage should occur. The amount of fluid withdrawn should therefore be enough only to bring the subarachnoid just so far below the arterial pressure as will allow the medulla to continue its functions: clinically, enough to cause a slight improvement in the patient, an improvement most easily judged by reduced cyanosis and more comfortable breathing. An immediate marked fall in the blood pressure is not necessarily to be expected. So much should be drawn off, and no more. I believe drawing off a few cubic centimetres at frequent intervals is a far safer and more valuable method than one copious drainage.

At all times watch and be guided by the blood pressure.

Three of the patients discussed were in University College Hospital. For kind permission to refer to these cases I am indebted to Dr. Charles Bolton (Case 1), Dr. Batty Shaw (Case 9), and Prof. T. R. Elliott (Case 10).

(*References at foot of next column*)

CARCINOMA OF THE LARGE BOWEL

AS THE DIRECT CAUSE OF ACUTE APPENDICITIS AND SIMULTANEOUS ACUTE INTESTINAL OBSTRUCTION

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Very few cases illustrating this sequence of events seem to have been described. Of three reported by F. O. Mayer,[1] the first was that of a woman, aged 70, with a six months' history of increasing pallor, loss of weight, and anorexia. In 24 hours there developed a fulminating attack of acute appendicitis. At operation, after the removal of the acutely inflamed appendix, a carcinoma of the cæcum was found and was later successfully resected. Mayer reports that the position of the carcinoma was the direct cause of the obstructed appendix. The second case may be summarised as follows:—

> A man, aged 65, had for three months suffered from attacks of para-umbilical pain and loose evacuation of the bowels, with occasional fæcal incontinence. For four weeks he had had pain in the right iliac fossa, rapidly increasing in intensity during the 24 hours before admission. On admission there was found rigidity and severe pain in the right iliac fossa; temperature 37·8° C. and pulse-rate 76. At operation free pus was found in the general peritoneal cavity, and a hard mass was felt in the lateral abdominal wall. A gangrenous appendix was removed with some difficulty. On the following day the wound discharged fæces, and the fistula thus formed subsequently showed no signs of closing. At the end of eight weeks, after a stormy convalescence, a mass was palpable in the region of the fistula, and at laparotomy a mobile carcinoma of the cæcum was found for which a successful ileocæcal resection was performed.
>
> The third of Mayer's cases was one of acute appendicitis with intestinal obstruction. At operation an empyema of the appendix was found and the site of the obstruction was at the splenic flexure: a string carcinoma. Some weeks later a Paul-Mickulicz resection of the splenic flexure was successfully performed. A cæcostomy had been done at the first operation.

Mayer's is the only apposite paper that we have been able to find.

THE AUTHORS' CASES

Case 1.—A man, aged 44, was admitted to the National Temperance Hospital with a history of eight days' pain in the right iliac fossa. There was some nausea but no vomiting, and the bowels were open daily. There was no previous history of any abdominal disturbance. On examination a tender circumscribed mass was found in the right iliac fossa. Mr. H. J. Paterson operated, and through a stab incision over the apex of the mass found pus and inserted a drainage-tube. A small fæcal fistula developed but closed 14 days after operation. On the seventeenth day the patient complained of some abdominal pain, which was associated with slight lower abdominal

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[1] Zentralbl. f. Chir., 1932, lix., 261.

(*Continued from previous column*)

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distension. Complete relief was obtained by enemata. Ten days later some purulent discharge recurred from the incision, but this ceased shortly, and he was discharged, at his own request, on the twenty-eighth day. At this time it was noticed that a mass was still palpable in the right iliac fossa.

One week later he was readmitted with the cardinal signs of acute intestinal mechanical obstruction, and a history of five days' colicky abdominal pain and absolute constipation. The abdomen was opened (G. E. P.) through a right paramedian incision. Free straw-coloured fluid was found and the terminal three feet of the ileum were very distended and œdematous, and the ascending colon collapsed. The cæcal region was involved in a hard mass to which the omentum was closely adherent, and one large and very hard gland was noted between the leaves of the terminal ileum. The possibility of malignancy was at this time suggested by one of us (D. B. R.), but the rarity of the coincidence combined with the patient's poor condition did not justify the time required for the performance of an ileo-transverse anastomosis combined with a proximal ileostomy; and the abdomen was closed after performing a valvular ileostomy and passing a slip of corrugated rubber down to the right iliac fossa on account of oozing.

The ileostomy functioned immediately and recovery was uneventful for 17 days, at the end of which time symptoms of obstruction returned and the ileostomy, which had been showing signs of closing, reopened. One day later there was a sharp rise of temperature, and the patient complained of severe pain in the right posterior axillary line and the right shoulder. There was no cough or rise in the respiration-rate, and physical and radiological examination of the right chest was negative. The white count was 53,000 (polymorphs 88 per cent.).

Aspiration in the tenth interspace, in the right posterior axillary line, yielded a thin pus containing streptococci, staphylococci, and *B. coli* at a depth of two inches from the surface. An incision was therefore made under local anæsthesia at this spot, and a large amount of thick pus was found under pressure. A drainage-tube was inserted. There was some recovery for the next two days, but on the third day a collection of pus was noted in the pelvis and left iliac fossa. Previous repeated examinations for this had been negative. The condition of the patient obviated further exploration, and death occurred that night—five weeks after readmission and ten weeks from the onset of symptoms.

At autopsy a gangrenous appendix was found lying in the retrocæcal abscess cavity. A direct extension of pus was traced upwards to the subphrenic space and into a large solitary abscess in the right lobe of the liver, into which the drainage-tube was inserted, and downwards into the pelvis and left iliac fossa. In the cæcum there was found a fungating growth which was obstructing the lumen of the appendix as it entered the cæcum and, continuing further, obstructing the ileocæcal valve. One large gland was found in the ileocæcal angle. No other metastases were found and there were no enlarged glands, either inflammatory or malignant, in the portal fissure. Sections of the growth and of the gland were those of a carcinoma of the glandular type.

CASE 2.—A man, aged 56, was admitted on Jan 7th, 1933, with a history of four weeks colicky abdominal pain and periodic attacks of distension. No loss of weight and no previous history of indigestion were recorded. On admission his tongue was clean and moist; there was no vomiting, and the bowels had been open daily. His temperature was 98·4° F. and his pulse-rate 84. There was gross small bowel distension, and a mass palpable and tender in the right iliac fossa. Radioscopy showed the distension ending at the ileocæcal valve. No abnormality was detected in the large bowel. The night temperature ranged between 99·2° and 100·2° F. The mass in the right iliac fossa was stony dull over its outer half, with an area of resonance over it nearer the midline. A diagnosis of appendix abscess was made, with the reservation that the mass might be a carcinoma of the cæcum. Liquid paraffin only and a light diet was prescribed in the hope that the mass and the distension would settle down.

There was no change in his condition for six days, during which time the bowels were open daily, and there was no pain except on pressure over the mass. At the end of this time the pulse-rate suddenly rose to 120 and the patient vomited twice. Operation was therefore decided on. The abdomen was opened (G. E. P.) through a right paramedian incision. Enormously distended coils of ileum at once presented, adherent to an inflammatory mass filling the right iliac fossa. The large bowel was apparently normal, and after gentle exploration foul-smelling pus was found coming from the region of the cæcum. This was carefully mopped up and a second gridiron incision made over the cæcum. Through this a tube was passed into the paracolic gutter and down into the pelvis, and a large de Pezza tube tied into the cæcum through which there immediately escaped a large quantity of foul gas and fluid green fæces. The paramedian incision was closed in the usual manner with interrupted sutures, a slip of rubber being inserted into the rectus sheath for 24 hours. His condition rapidly improved and in three weeks he was free of all physical signs, but the cæcostomy showed no signs of closing. It was decided, however, to wait for some time to see if it would close spontaneously.

By the beginning of April the patient's general condition was much improved, and the bowels were open normally nearly every day. The cæcostomy, however, had not closed, and it was decided that a further exploration should be undertaken to determine exactly the cause of the original obstruction, to remove the appendix, and to close the cæcostomy if circumstances warranted. On April 6th the previous paramedian incision was reopened (G. E. P.). One loop of ileum was found adherent to the underside of the cæcostomy. After freeing this the ascending colon was seen to be distended, and an annular carcinoma of the transverse colon was found about ten inches from the hepatic flexure. No glands were palpable in the mesentery, and no secondary deposits in the liver. An ileo-transverse colostomy was performed and the abdomen closed. No attempt, of course, was made to close the cæcostomy. During the next three weeks the cæcostomy rapidly narrowed down, and the bowels were opened twice or three times daily.

On May 18th the abdomen was reopened (G. E. P.) through the previous paramedian incision and the complete removal of the terminal ileum, cæcum, ascending and first part of the transverse colon, up to the anastomosis effected. Some small hard glands were palpable in the transverse mesocolon. A small drain was passed through the previous cæcostomy incision into the retroperitoneal space for 24 hours. The patient made an uninterrupted recovery but on the tenth day discharged some pus through the gridiron incision. He was discharged from hospital on June 14th.

Section of the appendix from this case shows evidence of chronic inflammatory changes such as one might expect to find after a comparatively recent acute attack of inflammation.

CONCLUSIONS

In the first case the course of events seems to have been as follows. A slow-growing and apparently symptomless carcinoma of the cæcum invaded and obstructed the appendix, giving rise to obstructive gangrenous appendicitis. This condition was masked by the fact that the patient did not present himself for treatment until the eighth day of the illness. After drainage of the retrocæcal abscess the condition settled down until further spread of the growth involved the ileocæcal valve and intestinal obstruction supervened. In retrospect it was noted that there had been a warning of the impending disaster in the week before his discharge from hospital on the first occasion. The second case closely resembles Mayer's third case and requires no further comment.

We wish to express our thanks to Mr. H. J. Paterson and to Mr. James McClure for permission to operate on and publish these cases, and to Dr. H. H. Sanguinetti and Dr. Cuthbert Dukes for their help and advice, and for the pathological reports and microscopic sections.

MEDICAL SOCIETIES

ROYAL ACADEMY OF MEDICINE IN IRELAND

At a meeting of the section of medicine on Oct 20th, with Dr. W. G. Harvey, the president, in the chair, a case of

Spontaneous Hypoglycæmia Associated with Hepatitis

was reported by Prof. Henry Moore, Dr. W. R. O'Farrell, and Dr. J. M. Hayden.

The patient was a woman, aged 40, admitted to hospital in coma without convulsions. The previous or family history revealed little of importance beyond occasional attacks of disorientation and loss of memory during the previous three years. The physical examination also showed little, apart from the coma and slight anæmia. On repeated determinations the blood-sugar varied from 25 to 29 mg. per 100 c.cm. An injection of 50 g. of glucose intravenously caused it to rise to 238 mg., and consciousness returned for some hours; but not withstanding glucose administration by mouth and rectum the blood-sugar fell again and the patient died about 12 hours afterwards. Post-mortem examination revealed nothing abnormal except a subacute widespread hepatitis. The liver was normal in size but soft and mottled. The pathological report on it was as follows: "The characteristic lobulated appearance of the liver is almost lost, and the pattern is more cellular than normal. The existent individual liver-cells are prominent and are markedly separated from each other, but many cells have been destroyed or are almost completely degenerated with loss of nuclei; the destruction is of single cells or small groups of cells throughout the whole organ; a striking feature is however the prominence and variation in the size of the nuclei, a considerable number of which are large and hyperchromatic, some show mitotic figures, and many liver-cells contain two nuclei. These changes are not confined to any particular part of the lobule." The pancreas was normal.

The changes in the liver were interpreted as due to a subacute parenchymatous hepatitis with destruction and degeneration of liver-cells. The cause of the hypoglycæmia was thought to be parenchymatous hepatic degeneration of unknown ætiology interfering with the glycogenic functions of the liver.

Prof. J. M. O'Connor said that as far as he could understand the body temperature had fallen, and yet the blood-sugar had not risen. This suggested the possibility that there really was some infective process going on.

Dr. A. R. Parsons asked why hypoglycæmia was suspected at all, and said he thought that the case was very like one of mild yellow atrophy, which had come on when the woman was pregnant. The conception of acute yellow atrophy had now been very much modified. He noticed that although the woman was unconscious on admission to hospital the Babinski sign was negative. In most cases when the patient was comatose the Babinski sign was markedly positive.

Dr. L. Abrahamson thought the case showed quite definitely that the tendency to call every case of hypoglycæmia a case of hyperinsulinism was not justified; the two conditions were not identical. He was sceptical about cases in which hyperinsulinism was regarded as the cause of coma.

Dr. K. Malley said he had seen several cases of hypoglycæmia, and found that in many of them a positive Babinski sign was present. He thought that this might bear some relation to retention of water in the brain.

Dr. Moore, in replying, said that when Dr. Hayden saw the patient on admission her condition led him to think that an overdose of insulin had been given. There was probably, he thought, only a step in between acute yellow atrophy and the condition present in this case. The attacks of unconsciousness had occurred before childbirth, and although they were undoubtedly aggravated by pregnancy he thought that pregnancy could not be held wholly responsible for them.

Dr. Geoffrey Thompson read a paper on clinical syndromes in Bright's disease.

LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION

An open meeting was held on Oct. 24th, when Prof. D. P. D. Wilkie gave an address on the

Surgery of the Colon

He said that disorders of the large bowel are among the commonest ailments which in general practice call for treatment. From the standpoints both of physiology and pathology the colon could be divided into two parts: the proximal part, reaching to the middle of the transverse colon, which is absorptive and therefore freely supplied with blood- and lymph-vessels; and the distal part, retentive and thus relatively poor in blood- and lymph-supply. Operations on the colon were rendered difficult, and unless special care was taken, dangerous because of its thin sacculated wall, its infective contents, and the tendency to gaseous fermentation within its lumen. To be successful, surgery must take cognisance of these special features and be planned accordingly.

Anomalies of development.—In the proximal colon, he said, variations in development are compatible with perfect health. It was derangement of function and not of anatomical position which interfered with health. If the proximal colon was regarded as a second stomach numerous and suggestive resemblances were to be found. The ileum represented the œsophagus, the cæcum the gastric fundus, the cæcal colon the body of the stomach and the pyloric antrum, and the cæcocolic tract the pyloric canal. Just as in the stomach, pathological changes were to be found for the most part in the lesser curvature and pyloric canal, so simple ulcer was practically always found on the medial border of the cæcal colon, just above the ileocæcal valve, and carcinoma at the cæcocolic sphincteric area. In the cæcum there was a tendency to non-obstructing fungoid carcinoma associated with marked anæmia, a condition strictly comparable with the fungoid growths of the gastric fundus. In the cæcocolic region of the ascending colon carcinoma of the scirrhous constricting type was common, as it was in the pyloric canal.

Speaking of the treatment of simple anomalies and disorders of the proximal part of the colon, Prof. Wilkie said that surgeons are apt to adopt too readily a mechanical outlook: on finding an unduly mobile colon to fix it; a tacked-down colon to free it; a dilated cæcum to plicate it or even excise it. As more was learnt about the physiology of the colon and its disorders, particularly those of its nervous mechanism, such operations would become less and less frequently performed.

In the distal colon anomalies of development were not so common, but two were outstanding. One was the presence of a very long loop of pelvic colon with a narrow intersigmoid angle, a condition which predisposed to recurring volvulus, best treated by resection of the greater part of the loop with end-to-end anastomosis; the other—the congenital megacolon of Hirschsprung—was due to an incoördination of its nervous mechanism, a condition which, having defied a great variety of methods of surgical attack, had now yielded to ablation of the sympathetic nerve-supply of the segment of the colon involved.

Diverticulitis.—The occurrence of small diverticula in the wall of the distal part of the colon had long been recognised by pathologists. It was, however, only some 20 years ago that attention was drawn to the not infrequent occurrence of a tumour-like mass in the region of the pelvic colon, liable to be confused with carcinoma. This was an inflammatory pericolitis, resulting from a leakage of micro-organisms through thin-walled diverticula in the colon. In its acute phase the condition, which had been aptly likened to a left-sided appendicitis, should be treated on expectant lines unless a localised abscess developed and required opening. Occasionally, when only a small and accessible portion of the colon was involved, as demonstrated by radiography, the diseased portion might be resected.

Carcinoma of the colon.—Malignant growths were of frequent occurrence and usually of slow growth; lymphatic involvement was relatively a late feature. They offered, therefore, a most hopeful field for radical surgery. In a few cases early dissemination to the liver or peritoneum might preclude removal; these cases, however, were exceptional and formed but a small percentage of the total. It was thus of prime importance that in this, the most curable form of visceral carcinoma, we should strive on the one hand to get reasonably early diagnosis, and on the other to render our operative procedure as free from risk as is possible.

Prof. Wilkie proceeded to give statistics of 181 cases of carcinoma of the colon on which he had operated. The average length of history was over one year. In 80 cases the growth was irremovable by reason of metastases, and a palliative operation was all that was possible. In 20 cases a lateral anastomosis, short-circuiting the growth, was possible; in 56 cases a colostomy above the growth was performed; in 4 cases nothing could be done. In 101 cases a radical operation was performed.

He spoke of the location of growth, and described operative treatment suited to different types of cases. Avoidance of tension was the watchword of colon resection. He emphasised the importance of complete mobilisation of the portion of colon concerned; the division of the tænia on the colon if end-to-end anastomosis was decided on; the insertion of one row only of interrupted linen Lembert sutures in order to avoid as far as possible interference with the blood-supply of the approximated cut margins; and a cæcostomy opening to ensure that no gaseous distension of the colon occurred during the first week after operation. If these conditions are fulfilled the post-operative course should be uneventful. Twilight sleep with spinal anæsthesia gave perfect relaxation and rendered the operation easier and safer than any form of general anæsthetic.

A follow-up of the 101 cases in which Prof. Wilkie had performed partial colostomy for carcinoma showed that 41 patients are alive and well over three years after operation. As many of these were in a desperate condition when first seen it was clear that even with the relatively late recognition of the disease which at present obtained encouraging results from operation might be anticipated.

REVIEWS AND NOTICES OF BOOKS

Fractures

By PAUL B. MAGNUSON, M.D., Associate Professor of Surgery, Northwestern University Medical School, Chicago. London: J. P. Lippincott Company. 1933. Pp. 466. 25*s.*

THIS is one of the most satisfactory of the many books on fractures which have lately appeared. It is not so burdened with details about rare and unusual fractures as to confuse the student approaching the subject for the first time, and yet the practitioner confronted with his individual fracture problem will find here the information that he seeks; that is, he will be able to determine what are the chances of successful treatment with the equipment and skill available to him. Where very specialised methods, involving difficult operations, are recommended, sufficient detail is given to allow the reader to appreciate the principles, but the practitioner is warned against their irresponsible application. The description of the treatment of each fracture is preceded by an account of the anatomical and mechanical considerations to be borne in mind, and prognosis, both as to length of disability and as to ultimate recovery, is a feature. The more common forms of treatment, by extension, fixation in plaster, skeletal traction, and the common wooden splint are clearly described and illustrated. No one should have difficulty in following the details, since the text abounds with practical hints and, wherever a drawing can help the description, it is provided. No one method of fixation has been given undue prominence; individual fractures are treated by the method which Prof. Magnuson has found to work best, and this catholic outlook will enhance the value of the work in the eyes of many hospital teachers. It is always easy to cavil at certain of the methods described in such a book. For example, early mobilisation of fractures of the carpal scaphoid, definitely advocated here, is at variance with modern practice. Again, the figure-of-eight plaster bandage, illustrated on page 104, for the fixation of the elbow in flexion after reduction of a supracondylar fracture of the humerus, is a method that has been rejected by many surgeons when treating these fractures in children; the "upper" turn of the figure-of-eight, in a short arm, tends to pull forward the lower end of the upper fragment with risk of reproduction of the deformity. On page 291 Sinclair's wooden foot-piece is wrongly described as the Sinclair Skate device. The section on fractures of the spine is for the most part excellent, but in view of the importance now attached to transport of these cases in the prone position it is disappointing to find the older method alone described. The chapter on fractures of the skull has been contributed by Dr. Loyal Davis, professor of surgery at the Northwestern University Medical School, who has also written on the neurological aspect of fractures of the spine. Both sections are a pleasure to read, for he has cleared the subjects of the trammels of confusion and involved description common in most text-books.

Although the book contains 466 pages, the print is large and clear, and much of the space is devoted to admirable illustrations. No reader need anticipate that the book will be tedious or difficult to read.

The Physician's Art

By ALEXANDER GEORGE GIBSON. Oxford: The Clarendon Press. 1933. Pp. 237. 7*s.* 6*d.*

OVER 250 years ago John Locke, *doctor* and philosopher, wrote the fragment entitled "De Arte

Medicâ," in which he considered the nature of the healing art; it is possible that he intended to write later and on a much larger scale on the subject, and the wonderful "Essay on the Human Understanding" proves this would have been within his power. Dr. Gibson prints this fragment of medical philosophy in a dozen pages of his book, and expands it upon a basis of general beliefs and assumptions which will be admitted as trustworthy. The method employed is indicated by the various chapters on art and science, on diagnosis, prognosis, and treatment, on ethics, and on the personality of the doctor. In each section the author says something well worth saying, associated closely or otherwise with the text supplied, bringing to his assistance an intimate knowledge both of modern medical writing and of much general literature. Dr. Gibson's long and wide experiences as physician and teacher have given him an opportunity to look at all aspects of the medical art, both closely and in the large, and as a result we have a wise and suggestive work.

Vol 2.
No 11

Treatment of Rheumatism in General Practice

By W. S. C. Copeman, M.B., B.Chir. Camb., M.R.C.P. Lond., Hon. Physician, B.R.C.S. Clinic for Rheumatism, Peto Place; Assistant Physician, West London Hospital, Children's Department, and Hospital of St. John and St. Elizabeth. London: Edward Arnold and Co. 1933. Pp. 215. 9*s.*

Dr. Copeman's book has many virtues, not the least of which is that it is readable. This is an achievement in a book on the treatment of rheumatism, for there is no one golden method applicable to the large group of rheumatic conditions. Success is achieved only by an intelligent all-round plan of attack. Each type of the disease demands a different method of approach and a book which does not lose sight of principles in enumerating details deserves praise. Dr. Copeman has for the most part succeeded in supplying such a book, but in some sections even he has been overcome by the mass of his material. For example, in the chapter headed "Medicinal" the reader would feel more encouraged to examine the large selection of drugs mentioned, including many whose constitution is obscured by trade names, if the quotations from Prof. Langdon Brown had preceded rather than ended the chapter.

The opening chapters of the book all deal with rheumatism in the child; then follow sections on acute muscular rheumatism, fibrositis, neuritis, and sciatica, after which the different forms of articular rheumatism are dealt with. The section on treatment, which is the main concern of the book, covers all the known methods of attack. After an introductory chapter on aims, there follow chapters on medicine, diet, vaccine and non-specific protein therapy, physical methods, manipulation, baths, colonic therapy, endocrine therapy, actinotherapy, orthopædics, and spa treatment; a short chapter at the end deals with prognosis and end-results. The chapters on physical methods and baths should make a particular appeal to the practitioner with the clear descriptions of treatment which can be carried out in the home. Dr. Copeman throughout shows a critical and balanced judgment. The chapter on manipulation suggests that this difficult but valuable method of treatment should be possible for many to practise with safety instead of as at present being regarded as the province of the few. The tone of the book is stimulating; it spreads an atmosphere of restrained enthusiasm which should encourage the practitioner to attack the rheumatic diseases with some hope of success. Such encouragement is essential in a field which has hitherto proved for many one of disappointment and failure.

Histopathology of the Teeth

and their Surrounding Structures. By Rudolf Kronfeld, M.D., Professor of Special Histopathology, Chicago College of Dental Surgery, Illinois. Philadelphia: Lea and Febiger. 1933. Pp. 479. $7.

This short book is in refreshing contrast with many huge tomes and text-books dealing with special branches of dentistry. There has long been a need for a book devoted to the pathology of the dental tissues as apart from dental treatment, and the restriction has enabled the author to provide concise information. The result is an excellent manual; a bibliography at the end of each chapter adds to its value. Some omissions may be noted. Thus there is practically nothing about the pathology of odontomes except for a brief section on cysts, which some authorities would exclude from that category.

While treatment is outside the scope of the book, Prof. Kronfeld points apposite morals as to certain aspects of operative dentistry. His conclusion that the operation of capping the pulp has little physiological basis is interesting. The chapter devoted to findings in root canal operations contains some shrewd comments on the value of various methods. We note with interest that the condition of exostosis or enlargement of the ends of the root through a deposit of cementum occurs more frequently in vital than in non-vital teeth in the proportion of four to one. This suggests that the condition may not be due to infection. In referring to the statement, often made, that this condition may lead to such general sequelæ as blindness, deafness, or insanity, and that these conditions might be relieved by the removal of such teeth, Dr. Kronfeld pertinently remarks that positive proof of this is lacking. The analogy he draws between exostosis and callus formation following a fracture, noting the absence of any disturbances of the central nervous system in the latter condition, seems to us enlightening. The chapter on reparative processes in the permanent teeth covers a difficult but fascinating subject very completely. The book is profusely illustrated and the pictures are uniformly excellent.

The Life of Edward Jenner

Second edition. By F. D. Drewitt, M.D., F.R.C.P. London: Longmans, Green and Co. 1933. Pp. 151. 6*s.*

This bright and readable little biography has reached a second edition. It should do much to bring home to the public at large the virtues and the immense services to humanity of the "father of immunology." The Life which was begun by his friend Baron soon after Jenner's death, long since out of print, contains a vast amount of information and was very bulky; Dr. Drewitt has made full use of this and other sources, and has woven into this attractive little book with much sympathy, learning, and understanding.

Jenner, whose father was vicar of the village of Berkeley, in Gloucestershire, was born in beautiful country, and throughout his life no temptation could take him for long from his native place. From an early age he was strongly drawn to natural history; at 9 he had a collection of dormouse nests, and also a much prized assortment of fossils. This flair for the study of natural objects was evidently encouraged by his relations, and after going to schools in the neighbourhood he became at the age of 20 the pupil of John Hunter, then aged 41 and at the height of his activites. Hunter was Jenner's hero, and there can be little doubt that Jenner was one of Hunter's most favoured pupils. When Jenner returned to Berkeley, therefore, he remained in constant touch with his master who kept him busy coöperating in his investigations, in making accurate observations, and in applying the experimental method. Jenner thus was primarily a naturalist; and, as Dr. Drewitt points out, it was through the fortunate circumstance that Berkeley was the centre of a dairy farming district that the opportunity came to him of investigating cow-pox. The story of the genesis of vaccination is too well known to need repetition here. The classical experiment performed by Jenner on May 14th, 1796, when lymph, taken from a cow-pox vesicle on the hand of Sarah Nelmes the dairymaid, was inoculated in two places on the arm of the boy James Phipps, and the subsequent demonstration of the latter's immunity to small-pox by direct inoculation of small-pox virus is perhaps the most beneficent instance of the application of the experimental method hitherto on record.

Fortunately for humanity Jenner was a doctor as well as a naturalist, and the application of his discovery on as wide a scale as possible became thenceforth a self-imposed duty for the rest of his life. The difficulties that he encountered and the attacks made on him were not without effect—witness a remark in his pocket-book "Among the vulgar—the great and little vulgar—nothing is recorded of vaccination but its imperfections. Its benefits pass by and are forgotten." But Jenner lived to see the triumph of vaccination and the acknowledgment of its immense value in preventing small-pox all over the world. If ever a man for reasons of personal service to humanity at large deserved to be buried in Westminster Abbey, Jenner deserved this honour, but, like William Shakespeare, he is buried in the church of his native place. This would undoubtedly have been his own desire.

The German Jew

His Share in Modern Culture. By ABRAHAM MYERSON and ISAAC GOLDBERG. London: Martin Hopkinson, Ltd. 1933. Pp. 162. 3*s.* 6*d.*

WRITTEN to demonstrate the share in modern culture of the German Jew, everyone will agree with the first words of the preface in this book, that if we lived to-day in a fully civilised world there would be no need to write such a book at all, as all human achievement, which counts for good to the world in general, however founded upon national or racial characteristics, should rise above the limitations of nation or country. Brief chapters follow on the biological and political dilemmas traceable to the fact that the Jew has, through most of historic time, been a nation without a country, and the association of this situation with the anti-semitism which has recently broken out in Germany is obvious. An attempt at the comparative valuation of genius is sketched by an analysis of the recipients of the Nobel Prizes, the winners being used rather amusingly to show that in the competition for these prizes 10,000,000 Jews have shown themselves, since the institution of the Prizes, to be the intellectual equivalents of 60,000,000 Germans—that is to say, that the Jews, being 1 : 6 numerically of the German population, have run neck by neck with the rest of Germany as Nobel prize-winners. In chapters detailing the prominence of the German Jew in various vocations, the authors have no difficulty whatever in showing the enormous debt which medicine owes to them as innovators, discoverers, theorists, systematisers, and appliers, thus fulfilling in their sphere the requirements of scientific medicine. The German Jews furnish more than their full quota of great and talented medical men, while in the sciences of mathematics, physics, and chemistry the carefully dated and documented lists, put forward in the book, prove that the same conclusion can be come to. In literature, including journalism and drama (with its exposition on the stage), in music, and in art—in each of these categories the names of German Jews are prominent and often world-known; in enumerating them the writers, who hold professorial rank in the United States, are brief and speak with moderation and detachment.

We have here a judicious and well-informed summary of what Jews have contributed to the science and art of the world while owning German nationality. But Germany, in response to the call of patriotic emotion, would appear to have forgotten these things.

Modern Theories of Development

By L. VON BERTALANFFY. Translated and adapted by J. H. WOODGER. London: Humphrey Milford, Oxford University Press. 1933. Pp. 204. 8*s.* 6*d.*

MECHANISTS started with the assumption that life was a collection of physico-chemical processes, vitalists thought that it was a philosophical problem. Between the two, few people realised that it was a thing of itself and that biology was an independent science whose business it is to study life as such. The authors argue that such is the present working truth. They take their data from development and experimental embryology, but as they point out they might as well have come from any department of physiology or, we may add, pathology. The book is rather stiff and awkward in style but it puts its case well enough.

Medical Entomology

By R. MATHESON, Ph.D., Professor of Entomology, New York State College of Agriculture, Cornell University. London: Baillière, Tindall and Cox. Pp. 489. 29*s.*

AN eminently readable and well-balanced introduction to what has grown into an immense subject; the technical details of morphology are comfortably subordinated to the practical applications in which the hygienist is interested. The author's style is such that he conveys a great deal of information in few words without any tendency to degenerate to shorthand; his book is therefore pleasant to read as well as useful for reference. The magnification of the figures might well have been indicated more precisely; when one is looking for or at something one has never seen before, it is essential to have some idea of the size.

THE "History of Urology," in two volumes, by E. G. Ballenger and others, reviewed in THE LANCET of Oct. 28th, is published in England by Messrs. Baillière, Tindall and Cox.

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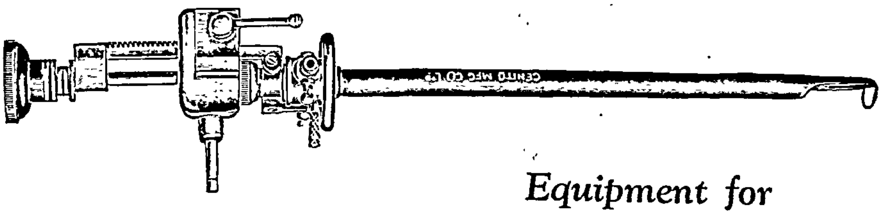

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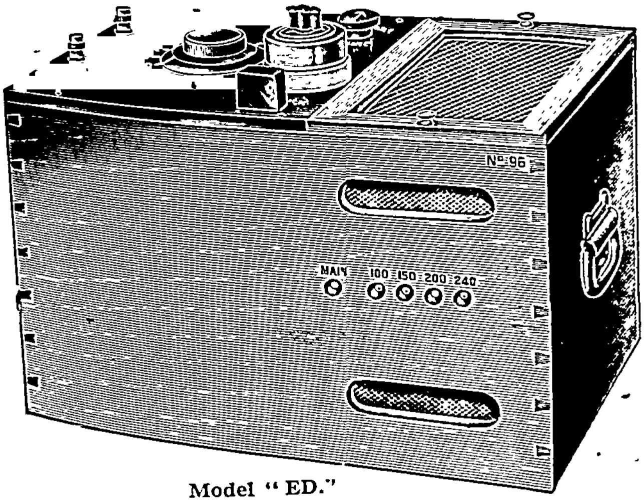

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THE LANCET

LONDON: SATURDAY, NOVEMBER 11, 1933

THE PATIENT WHO CANNOT PAY

A MAN visits his doctor and is found to be approaching one of the preventable breakdowns of middle life. He needs surveillance and is told to return at monthly intervals for advice. What are the prospects of his doing so? If he is poor—and many people are poor—the prospects are almost hopeless. Yet here is a doctor anxious to do the work he can do well, and here is a man anxious to profit by it; they are separated only by a fault in financial organisation. The practitioner gets into difficulties because he cannot sell his knowledge, and the patient is unnecessarily ill because he cannot buy it. We are back at the situation now so familiar—the situation too truly defined in the words "starvation in a world of plenty." Fortunately, however, the failure to solve the general problem of under-consumption does not imply an equal failure to solve the particular problem of patient and doctor. It is perfectly possible to bring these two together—under a system of insurance; and the time is undoubtedly coming when every member of the working classes will get medical care on this basis. The only question really left for the private practitioner to decide is whether he shall anticipate future developments and so secure his proper place in them. At present he complains, with reason, that hospitals and clinics are encroaching on his legitimate sphere of action, and he hopes perhaps that the complaints will prove effective. But he will never get redress in this way; for the underlying cause of the encroachment is that he does not give the public what they want at a price they can pay—as individuals. There is little or no criticism of private practice in principle; almost everyone prefers that he and his dependants should live in the care of a family doctor whom he knows and trusts. But if a man has no simple insurance system to rely on, the burden of illness, already heavy enough, always carries another burden of medical fees; and the average person of small means only shows good sense if he thinks of emergencies and puts his faith chiefly in some contributory scheme. The result, however, is that organisations like the Hospital Saving Association are innocently aiding the destruction of family practice among the industrial classes.

In course of time, presumably, the present National Health Insurance scheme will be extended to cover the wives and children of those now insured—an extension which the British Medical Association has already demanded. It may be long, however, before this happens, and meanwhile the general stimuli of public demand and professional need are causing local reactions. The result of these reactions, in more and more parts of the country, is a "public medical service" run by the practitioners themselves. In their simple form these are merely organisations which abolish ordinary fees in favour of a regular small subscription; the benefits offered to members are the ordinary benefits conferred by the family doctor; the money is collected centrally, but neither patient or practitioner loses his independence. Since there are no contributions from employer or from the State, the members must find all the funds required; but in London, for example, it is found that payment of *4d.* a week by each of them—with reductions for quantity within the family—is enough to provide a satisfactory standard of service, including medicines. The scheme, nevertheless, has its critics, and the London Public Medical Service came under heavy fire at a meeting on Nov. 2nd to which all practitioners in London and Middlesex counties were summoned. Although it is seven years old and contains over 900 doctors this particular service is making little headway and wants to extend its activities. Last July the B.M.A. declared its approval of such extensions provided certain conditions are observed, and one of these is that they shall be approved as "in the public interest" by a meeting open to all practitioners in the area affected. Dr. ALFRED COX had comparatively little difficulty in showing that the L.M.P.S. is valuable to the public; the doubts concerned its value to the doctor. But now was the opportunity, he urged, for the profession to prove it could organise a service without lay administration, and to grasp this opportunity would be the best answer to municipalities which were extending their clinics, and hospitals which bragged about the number of their out-patients. Dr. E. A. GREGG, chairman of the service, spoke of its helpfulness in negotiation with public bodies. It is no use, he said, to keep on pointing out that economy and efficiency are better served by the practitioner than by out-patient departments unless one can show that means are offered by which the patient can pay. The private practitioner has got to prove that there is no form of practice he will not tackle if given a chance—and the public medical service gives that chance.

The value of fair contract rates as an object lesson, the stability conferred by a regular source of income, and the advantages of medical autonomy—all these were generally admitted by the meeting. Very real opposition, however, developed over the question of advertising and the possible use of agents. Some of the public medical services have made no attempt at publicity by any method except personal contact between doctor and patient; but others, including the London one, find they can make little progress without a direct appeal through the press. At first an insurance scheme of this kind attracts an undue proportion of patients who are permanently or frequently ill, and its full advantages to the practitioner do not appear, it is said, until he has a list of something like 200. In these circumstances advertising may well make all the difference between success and failure, and supporters of the services were able this year to persuade the

Representative Body of the B.M.A. that it is necessary and desirable, though a motion to prevent employment of agents was barely defeated. Last week's London meeting was quite firmly discouraged from discussing the question at all; it was told that its duty was merely to say whether the service is or is not in the public interest. But thanks to the determination—indeed, heroism—of Dr. ROBERT CARSWELL, of Wandsworth, the issues were defined, and even decided by vote. Assurances were given that the so-called agents were merely collectors of subscriptions, and in no circumstances would be allowed to tout for patients. Nor would any practitioner in the service be within his rights in seeking new patients on his own account, whether directly or by putting "member of the London Public Medical Service" on his surgery door. Moreover, when the central office is asked for information it refers the patient to his own doctor, and does not pursue him further. There is, indeed, a possible arrangement by which a patient joining the scheme can continue to attend a doctor outside it, on the basis of the "own arranger," but this does not seem to be in action. Failing such an arrangement, successful advertising of the service will undoubtedly tend to drive all the local practitioners into it willy nilly, and Dr. CARSWELL won much support for his amendment approving it provided that it "neither advertises in the lay press nor employs agents for the purpose of bringing the scheme to the notice of potential subscribers." The majority of those present obviously preferred that knowledge of the service should be spread only by doctors to their patients, and Dr. CARSWELL's amendment was on the point of being carried when Dr. GREGG made his impassioned and final appeal. The fallacy lay, he said, in supposing that all the people of London belong to some particular doctor. This was nonsense. The Hospital Saving Association was gaining new subscribers at the rate of 100,000 or 150,000 a year; most of them had no intention of going near a private practitioner at all; and it was a matter of urgency to stop the drift into hospital contributory schemes. The meeting so far agreed with him as to pass Dr. H. M. STRATFORD's motion approving the service and recommending it to practitioners.

THE ATTACK ON THE SLUMS

Sir HILTON YOUNG has announced that the reply of the local authorities to the Government's call for action will be a programme for clearing away more than 200,000 houses and rehousing more than a million people, at a cost of about £95,000,000. This is an estimate of the whole programme of the five-years plan based on the returns already received which cover three-quarters of the population, and the Minister claims it as a very big objective. And so indeed it is. But how far short it would fall of solving the housing problem will be realised when it is considered that this programme represents only a substitution of new houses for old to the extent named; it makes no contribution towards the provision of the additional low-rented accommodation required in every part of the country for the relief of overcrowding elsewhere than in the particular dwellings marked for demolition. The extent of this overcrowding and the amount of new housing necessary for its relief have been variously estimated. Sir Ernest Simon, M.P., in his book on the "Anti-Slum Campaign," reviewed last week in our columns, takes the numbers of dwellings and of individual families from the 1931 census, and arrives at a requirement (at that date) of 830,000 low-rented dwellings, to which he adds 750,000 and 190,000 for the estimated increase in families from 1932–41 and 1942–51 respectively. This gives him a total of about $1\frac{3}{4}$ million houses required during the next 20 years—one-half to meet the existing shortage, the other half to house the families which will come into existence during the period. This is in addition to the "millions of new houses" needed for the replacement of slum property and the rehousing of its dwellers.

A census family is "a person or group of persons ... in separate occupation of any premises or parts of premises" a lodger being so treated when boarding separately. It cannot be necessary for every such group however small to have a separate house, particularly as under the above quoted definition there must be a tendency for grown-up sons and daughters of families leaving home to be enumerated as separate units. If Sir Ernest Simon's estimate errs on the high side it may well be that the estimate of Mr. Philip Massey recently published in the *Architects' Journal*, brings out too low a figure. Mr. Massey's calculation, also based on 1931 census figures, attempts to measure housing needs by taking regard both of overcrowding and of unfit houses. An individual analysis is made of the census figures for London, for each of the 11 largest provincial cities in England and Wales, and for the three largest Scottish cities; and the line between the overcrowded and the not overcrowded is drawn for purposes of convenience at the standard of one and a half persons per room in England and Wales and two persons per room in Scotland. The resultant figure of new houses required is then multiplied by a factor based on the assumption that housing conditions in the rest of the country (ranging from cities of about 250,000 to the smallest rural areas) are one-half as bad as in the cities investigated. On this basis the needs of Britain, including abatement of overcrowding and replacement of insanitary dwellings, amount to 1,400,000 houses. But Mr. Massey's assumption that housing conditions in the smaller towns and in rural areas are only half as bad as in the large cities is seen to be too optimistic in the light of the housing supplement, just published, to Dr. J. M. Mackintosh's report on the health of Northamptonshire for 1932. It is not an account of *all* the unsatisfactory dwellings in the county, and Dr. Mackintosh admits that his sanitary inspectors might find the standard of housing he proposes too low rather than too high. Nevertheless, as a result of his personal inspection of 4056 houses out of a total of 59,082 structurally separate dwellings in the county, he found it necessary to condemn 1949 and to schedule 1573 for reconditioning. There is no reason to suppose, he remarks, that the houses in Northamptonshire are worse than elsewhere.

Public opinion on housing conditions has been slow to awake, partly from sheer ignorance of the terrible facts of the real situation of so many working-class families, and partly because the complexity of the problem and the difficulty of finding an agreed remedy are such as to deter all but the most determined reformer. But public opinion has made some definite strides in the last few years and its advance is rapidly gaining in force and speed. The man in the street is beginning to realise two things: first, that the millions of public money poured out for housing since the war have benefited hardly at all the lower-paid working classes; and secondly, that the conditions under which these classes live are not only intolerable for decent people, but a national danger and disgrace. "There are many dilatory pleas," writes Dr. Mackintosh, "which can be maintained against housing reform. . . . The best refutation is personal investigation. In my own inspections I have been moved to anger and resentment at the conditions under which many of our fellows live." Something of this resentment seems to have made itself felt at the East Fulham by-election.

Sir Ernest Simon finds fault with the present Government's policy on two main counts. First, that the whole conception of slum clearance is essentially wrong at this stage; sufficient additional accommodation at low rents should be created to cure existing overcrowding, and only if that has been accomplished should clearance be undertaken. In other words, the quantity stage of the problem must be tackled first, the quality stage later. His second major criticism is levied against the plan to accomplish as much as possible through private enterprise. He holds that the proper function of such enterprise is to build houses for the occupier-owner; the lower-paid workers can never be housed by enterprise which "at best cannot build houses to let at less than 14*s*., including rates." Moreover, the planning, lay-out and design of the council houses is superior because of the more usual employment of architects, and the buildings themselves are of better quality because the houses are not being built just to sell at a profit but for permanent ownership. There is saving in rent too, because the local authority can borrow money more cheaply than private enterprise. Further, it is doubtful, he thinks, whether private enterprise is willing to build houses for letting at all. A different view of the problem and its remedies is in a pamphlet "The Housing Problem: a Concise Survey," just issued by Sir Francis Fremantle, as a guide to local authorities and their health officers. Sir Francis writes on housing with an authority which cannot be called in question, and his experience as a county health officer lends weight to what he says. His sympathetic outlook is well illustrated by the description of slumdom which we quote elsewhere (see p. 1117). He defines the Government's policy as to concentrate public effort and money on the clearance of the slums, and to rely, in the main, on competitive private enterprise to provide new working-class houses other than those to be built for slum replacement. The question is whether private enterprise will find sufficient incentive.

What then is the chance of any reasonably speedy resolution of our housing difficulties? We believe that what purely commercial private enterprise will not attempt and could not achieve, and what the local authorities, fully occupied with slum clearance, will have their hands too full to undertake, could be accomplished by energetic utilisation, on the lines recommended in the report of the Moyne Committee, of the form of philanthropic enterprise represented by the voluntary housing movement. A central public utility council set up on a statutory basis and provided with national finance would stimulate the establishment of housing societies in every part of the country. The local societies, working through the local authority, would acquire overcrowded semi-slum property having a prospective life of not less than 20 years, and would be enabled by means of a subsidy smaller than that of the 1930 Act to build for the purpose of rehousing the surplus of the overcrowded population in the acquired properties. Both Sir Ernest Simon and Sir Francis Fremantle, widely though they differ as to the proper long-range policy to be adopted to solve the housing problem, are agreed on the necessity for sympathetic management on Octavia Hill lines. Both again view with sympathy schemes of differential renting, a method which appears likely to afford a means of providing decent homes for those unable to pay an economic rent that is superior to and much more economical of public money than any system of flat-rate subsidy. The operations of the voluntary societies offer an admirable field for putting into practice schemes of this kind and provide a convenient half-way house between, on the one hand, competitive private enterprise which cannot come into operation where no commercial profit is in view, and, on the other, the vast increase of municipal ownership involved in the assumption by the local authority of the duty of providing all the required low-rented working-class houses. Everyone with first-hand knowledge of the subject now agrees that provision of decent homes for overcrowded slum-dwellers does not, under skilled management, mean "coals in the bath." While in Dr. Mackintosh's phrase the descent of Avernus is easy, and while it is inevitable that a family forced into unhealthy conditions should deteriorate, nevertheless the percentage of failure to rise to decent levels, when the opportunity is provided, is very small. The task of re-education in the one case and of prevention in the other can be most speedily accomplished by giving skilled management its chance. That is the essence of the Moyne report, and it will only be by giving effect on a generous scale to that Committee's recommendations that the Government will be able to fill the gap in their housing programme.

SUBSTITUTES FOR THYROID EXTRACTS

Prof. Harington's synthesis of thyroxine was an achievement of obvious importance, and it is not his fault that it has so far been of little or no practical help to the clinician. Thyroxine, when injected intravenously, has an effect on metabolism which is almost mathematically related to the dose employed. But when it is given by the mouth its behaviour cannot be foretold. From the theoretical standpoint this discrepancy should not be ignored for, as Mr. Trotter has reminded us,[1] the most fruitful advances in knowledge have come from the study of such irritating "residues." But from the therapeutic standpoint it is annoying, since no one suffering from myxœdema is going to submit to a lifetime of venepunctures when dried thyroid gland will keep him in comfortable health—however unscientific the latter method of treatment may be to the purist. For these reasons, among others, the search has been widely pursued for some stable stimulant of metabolism, suitable for oral administration, which would be free from the drawbacks of synthetic thyroxine and yet capable of more accurate standardisation than the present thyroid preparations. And this search has not been unfruitful. Not long ago Cutting and his associates[2] found that dinitrophenol accelerated the basal metabolic rate, and suggested that it might prove to have clinical applications. Enthusiasm for this preparation has since been a little damped, however, by the evidence[3] that dinitrophenol is a dangerous drug—as was clearly pointed out when it was introduced. Pursuing a similar research, Prof. Dodds and Sir William Pope have published a preliminary report[4] suggesting that dinitro-o-cresol, although of the same order of toxicity as dinitrophenol, gives the same effect with one-third of the dose. The risk of poisoning is accordingly proportionately reduced; but until much more is known about them the general use of such nitrobenzene derivatives is out of the question.

The work of Dr. Anderson, Prof. Harington, and Prof. Murray Lyon, described on p. 1081 of this issue, has been along different lines. Adopting the hypothesis that the erratic effect of thyroxine when administered orally is due to its extreme insolubility, they cast around for some more soluble derivative of the hormone. They find that 3:5-diiodothyronine fulfils this requirement, and at the same time has a marked and regular influence on metabolism when given by the mouth. It is a stable compound, easily prepared and capable of accurate standardisation; being in fact, the penultimate stage in the synthesis of thyroxine. So far there has been no evidence that it is toxic, but this, of course, does not mean that diiodothyronine can be prescribed light-heartedly. As an active preparation of thyroid it must inevitably cause unpleasant symptoms if given in sufficient quantity. At the same time the use of a pure substance, with its constant potency, has conspicuous advantages, and the time is not far off when "tabs. thyroid"—that old and trusted friend of the physician—will resign from the pharmacopœia in favour of a junior even more trustworthy.

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[1] Trotter, W.: The Lancet, 1933, i., 287.

[2] Cutting, W. C., Mehrtens, H. G., and Tainter, M. L.: Jour. Amer. Med. Assoc., July 15th, p. 193.

[3] Anderson, H. H., Reed, A. C., and Emerson, G. A.: Ibid., Sept. 30th, p. 1053; and Oct. 7th, p. 1171.

[4] Dodds, E. C., and Pope, W. J.: The Lancet, August 12th, p. 352.

ANNOTATIONS

FLUCTUATIONS IN BLOOD COUNTS

The stimulus to the questioning of "facts" accepted in medicine is often the discovery of new more perfect methods of investigation; at other times the technique remains unchanged and the challenge comes from those who have chosen to repeat classical observations. The mass of data which has accumulated round the blood count in normal and pathological conditions is the latest focus of critical attention. Doubt has recently been cast on the reliability of blood counts as heralds of damage following irradiation, notably in the tenth annual report of the British Empire Cancer Campaign,[1] on two grounds: (1) that very great variations in the blood count normally occur not only between different normal persons, but even in the same person at different times of the day, and (2) that when the blood counts of patients exposed to radiation were checked against controls (nurses) it was found impossible to establish any normal standard. For these reasons, it was held, variations in the leucocyte count could not safely be accepted as a warning of damage by rays.

These conclusions were based on work done respectively by Dr. R. H. Simpson and Dr. G. White Phillips under the auspices of the Campaign. Neither paper has yet been published with full clinical and hæmatological details, and criticism of the findings may therefore be premature. But since the conclusions have gained widespread publicity it is worth examining such of the data on which they are based as are accessible. Considering first those of Dr. White Phillips, his third conclusion[2]—"A low lymphocyte count was found in most of the cases of malignant disease, but the effect of the large doses used was very definitely not the production of a lymphopenia"—is perhaps the most important. Its basis must depend not on the percentages given in his first graph but on the absolute figures for lymphocytes; when these are calculated it appears that, contrary to his conclusion, the initial lymphocyte count was low (under 1400 per c.mm.) in only two of his nine malignant cases, and that in eight of the nine cases a fall in lymphocytes occurred even during the short period—less than two months—of observation. It is obvious that this work requires repetition on a much larger scale. But assuming it amply confirmed that no considerable changes occur in patients subjected to irradiation in large doses over a short period, this does not imply that workers subjected to very small doses over a long period are necessarily immune from the possibility of damage. The more serious heterodoxy is that voiced by Dr. Simpson, the acceptance of whose conclusions would involve readjustment of current views not only on the effect of irradiation but also on the value of blood counts in general. For example, if, as he contends, the leucocytes of any person can fluctuate as much as 6000 per c.mm. in a quarter of an hour or 4000 in six minutes, the leucocyte count as a procedure of diagnostic significance would be largely discredited. Clinical pathologists should proceed to collect ad-hoc evidence on a large scale which will finally confirm or refute the relative stability of the leucocyte count and the extent and rapidity of its fluctuations in the normal subject. It must be remembered that Dr. Simpson is only the latest of a series of observers who, as a result of careful work, have cast doubt on the stability of the blood picture. Such doubts have been voiced from time to time by various workers without in the long run shaking the faith of clinical pathologists in the significance of the results they obtain or of clinicians in the interpretation to be placed on them. The conclusions of the orthodox hæmatologist when confronted by scepticism of this kind were well summarised by Prof. Eric Ponder and his collaborators in 1931.[3] They said :—

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[1] See The Lancet, July 15th, p. 138.

[2] The Lancet, Sept. 30th, p. 745.

> "Under conditions of moderate activity the large fluctuations in the total white-cell count described by Sabin, Cunningham, Doan, and Kindwall have not been observed. Those large fluctuations seem to be due principally to errors of method. The total white-cell count shows, however, small fluctuations not exceeding ± 8 per cent. throughout the day ; these persist even after all errors of method have been allowed for."

Until overwhelming evidence is produced that Prof. Ponder is wrong, and that the stability on which great superstructures have been based is a mere delusion, it is safer to continue to assume a significance in pronounced variations of leucocyte counts, especially when dealing with workers in radiological departments. The reaffirmation, which we recorded in last week's issue (p. 1060), by the X Ray and Radium Protection Committee of the desirability of watching the blood picture of workers exposed to radiation will be welcomed by all who are concerned with the welfare of these workers. It is, at any rate since, if not because of, the general adoption of the recommendations of the X Ray and Radium Protection Committee that the health of workers in X ray departments has very definitely improved. Unfortunately all over the country X Ray departments still exist that have failed to bring themselves up to date in matters of protection. Until all X ray departments are well ventilated, and the workers properly housed —and the tendency to utilise basements for the work dies hard—the Protection Committee are well advised not to make any substantial alteration in the existing recommendations.

HOSPITALS AND LOTTERIES

LAST week the chairman of the Cromer district hospital and the organiser of the Cromer hospital carnival were summoned for having published in August a proposal for the sale of tickets in a lottery contrary to Section 4 of the Lotteries Act, 1823. Their scheme offered shilling tickets which to the purchasers meant three things—first a contribution to the hospital, second the right of admission to the grounds for the fête, and third the chance of winning a motor-car. The defendants had consulted the chief constable of Norfolk, who told them the scheme was a lottery and might involve a prosecution. They proceeded with the scheme and the hospital benefited to the extent of £880 ; prosecution followed. The defence contended that it had not been established that any purchaser bought a ticket in the hope of winning a car ; the magistrates, however, found the case proved. There was no element of skill about the competition for the car ; it was a mere chance or lottery. The bench, regretting that the chief constable's warning had been disregarded, passed sentence. The defendants were bound over to be of good behaviour for six months and were ordered to pay 10*s.* 9*d.* each towards the costs of the case. It is one more instance of what the Royal Commission on Lotteries and Betting called the derisory treatment by magistrates of prosecutions initiated under an archaic law. The Commission, it may be recalled, said the institution of large-scale lotteries was undesirable, the least objectionable form of lottery was a State lottery for the benefit of the Exchequer but this was not to be recommended, the existing prohibitions should be maintained (subject to exemptions for small-scale private lotteries such as the club members' sweepstake or the bazaar raffle), and the statutes should be rewritten in modern form. Whether this or any other Government will find time to tackle so thorny a subject it would be imprudent to hazard a guess. The Home Secretary declines to make any promise. The summons in respect of the Duke of Atholl's "appeal to sportsmen," to be heard on Nov. 14th, will clear up legal uncertainties and may expedite amendment and revision. The Royal Commission was substantially unanimous in its findings, but it is hard to forecast the answer Parliament might give to any particular proposals. In 1918 the House of Lords passed a Bill which would have enabled the governing body of any registered war charity, with the consent of the police, to raise money by lotteries ; the House of Commons declined to give it a second reading by a narrow margin. In May, 1931, a private member was refused leave, by 181 votes to 58, to bring in a Bill to authorise raising money for hospitals by means of lotteries ; the same member tried again a year later and his motion was carried by 176 votes to 123. Between those two events the British Hospitals Association had passed a resolution that it was not in favour of amending the law affecting public sweepstakes which purported to be for the benefit of voluntary hospitals. Few can doubt that, if such lotteries are promoted, there must be loss of individual support. The Irish Free State experiment should have furnished definite information on this point, but the Royal Commission had no very clear guidance from hospital managers in Great Britain.

GASTRIC ACIDITY AND PEPTIC ULCERATION

THE prolonged studies of gastric secretion by Vanzant and his co-workers [1] at the Mayo Clinic have been carried a stage further by the accumulation of new data on changes in secretion in various pathological conditions. About a year ago they published an analysis of nearly 4000 test-meal results in normal people from youth to old age.[2] Their present paper deals with the results in 1898 cases of duodenal ulcer, and also 188 cases of gastric ulcer in which an ulcer was demonstrated at operation. An equal number (188) cases of anastomotic ulcer following gastro-enterostomy are also presented. In analysing the results the investigators have utilised a relatively accurate method of estimating variations from the normal, and this takes into account the probable error in expressing the mean deviation from the normal in any given person. Actually, as they say, the range of normal is so wide that no reading can be pathognomonic of any disease; but with the large numbers of "normal" and "abnormal" cases at their disposal they are able to draw certain conclusions. Using a one-hour test-meal of the Ewald type (eight arrowroot cookies and 400 c.cm. of water), they find that there is a considerable increase of free acidity over the normal in cases of duodenal ulcer—i.e., of about 12 c.cm. N/10 soda per 100 c.cm. gastric juice (or 12 units). In gastric ulcer, on the other hand, they find not only no increase in acidity, but actually a decrease below the normal of about 6 units. In 174 men suffering from gastro-jejunal ulcer after gastro-enterostomy the gastric acidity was lower than normal by about 4 units, being no higher than that of patients similarly operated upon who had not developed such ulcers. The figures bring out, therefore, the important finding that the presence of gastric or gastro-jejunal ulcers is not associated with hyperacidity, whereas that of duodenal ulcer usually is. They do not indicate what part gastric acidity may play either in the production or the persistence of peptic ulceration, but they suggest that perhaps this part may have been exaggerated.

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[3] Quart. Jour. Exper. Physiol., 1931–32, xxi., 35.

[1] Vanzant, F. R., Alvarez, W. C., Berkson, J., and Eusterman, G. B. : Arch. Internal Med., Oct., 1933, p. 616.

[2] See THE LANCET, 1932, i., 1158.

MERCUROCHROME IN ASCENDING RENAL INFECTIONS

WHEN death follows prostatic obstruction its direct cause is most commonly infection of the kidneys. H. H. Young[1] has tried to combat this complication with Mercurochrome, and finds, first, that the method is not dangerous, and secondly, that small doses of the drug are often as effective as the large ones formerly employed. His practice is to begin with 10 c.cm. of a 1 per cent. solution, and after an interval of a day or two to increase the dose by 3 c.cm. Its administration is repeated if necessary at intervals of two or three days, the amount being increased on each occasion by 2–3 c.cm. In cases of a fulminating type the original dose of 5 mg. per kg. of body-weight (23 c.cm. of 1 per cent. solution per 100 lb.) is desirable. Mercurochrome may cause a transient albuminuria and intestinal irritation, but in Young's opinion it has never been responsible for a nephritis. The treatment gives better results in acute than in chronic cases and he finds it particularly effective in staphylococcal infections. The drug appears in the urine within a few moments of intravenous injection, and in an hour is found in such concentration that if the amount of fluid intake is limited, the urine has a distinctly bactericidal action.

THE FUTURE OF THE TUBERCULOUS CHILD

THOSE in charge of tuberculous children in hospitals and sanatoriums must often wonder what will have become of their patients a generation hence. An answer to this question is to be found in a laborious study recently conducted by Dr. J. Lundquist,[2] whose findings are published in two successive numbers of the transactions of the Swedish Medical Society. During the period 1910–20, the Söderby Hospital for the tuberculous, belonging to the municipality of Stockholm, housed 944 children of all ages up to 15 years. No information could be obtained about the subsequent fate of 18 of them (1·8 per cent.). Among the remaining 926, there were as many as 671 survivors. Information was obtained with regard to the health of 415 of these survivors in 1930 and 1931. It was found that 24·3 per cent. of all the children had died of tuberculosis. The tuberculosis mortality showed two peaks—the first and highest that of children infected in infancy, the second at puberty and just before it. Even during infancy, the disease must not, of course, be regarded as inevitably fatal; the tuberculosis mortality among the children infected during the first year of life was about 55 per cent. After the first year, the mortality declined rapidly, reaching its minimum (10–14 per cent.) between the ages of 3 and 9. The tuberculosis death-rate among the children admitted to hospital at puberty was about double that among the children treated at the earliest school age. More than half of the deaths occurred within a year of admission to hospital, and about three-quarters within the first five years. On the average, the pulmonary lesions were more serious among the girls than among the boys on admission. The mortality was also higher, and the course of the disease shorter, in the fatal cases among the girls. When the tuberculosis was open, the mortality was exceedingly high (87 per cent.); and open tuberculosis was twice as common among the girls as among the boys. No signs of active disease could be found in 78 per cent. of the re-examined, and all those interested in the tuberculous child should find encouragement in the high survival-rate and the number of children who became healthy adults.

DIVERTICULA OF THE SMALL INTESTINE

INTEREST in rare conditions like diverticula of the small intestine is seldom aroused except by some chance encounter with an actual case. Nevertheless, the fact that the current issue of the *British Journal of Radiology* contains a report on six cases of duodenal diverticula occurring in the practice of one radiologist,[1] while in the *British Journal of Surgery* Butler[2] records seven cases of multiple diverticula of the jejunum seen by himself, suggests that the possibilities of these disorders should not be buried too deep in our minds. As mentioned by Fraser,[3] who describes yet another case, diverticula of the duodenum are really a specialty of the X ray room, whereas those of the jejunum and ileum are discovered in the operating theatre. As is only to be expected, the difference in development, anatomical fixation, and physiological function of the gut above and below the duodeno-jejunal flexure is reflected in a distinction between the nature of symptoms and complications of diverticula at the different levels. Peridiverticulitis and diverticulitis may be found at any level, though they seem to be rare in the duodenal case, but the perforating diverticulum, and therefore the acute abdominal emergency, is characteristic of the gut below the duodeno-jejunal flexure. Thus Costello[1] did not find a single report of perforation from the duodenum. The "acute abdomens" are opened on a diagnosis of perforation of a hollow viscus, subacute intestinal obstruction, or, simply, peritonitis of unknown origin. Perforation of a diverticulum of the small intestine is one more possibility to be considered in the case of abdominal emergency which does not disclose its secret as soon as the peritoneal cavity is opened.

The symptoms of duodenal diverticula are those of "chronic indigestion," and are apt to last for years. Complaint is of pain across the epigastrium and in the back, with an uncertain relation to food, and there may or may not be vomiting. The diagnosis is made either at operation or during a routine X ray examination for peptic ulcer, and it should be noted that a diverticulum in the first part of the duodenum may owe its origin in the first place to a weak spot in the wall of the gut where there is an ulcer scar. In the second part of the duodenum, pressure on the bile-ducts is a complication to be feared. Jejunal diverticula have seldom been diagnosed during life, and their symptoms have been various; but certain points are characteristic enough to be worth recording. The pain does not seem to be severe, and is definitely noted as not being colicky—a fact to correlate with the absence of muscle in the wall of the diverticulum. A gurgling sensation—even a gurgling noise—in the abdomen is described with some constancy, and vomiting is common. The symptoms can usually be relieved by recumbency, a fact which Fraser explains as due to the effect of gravity in emptying the pouch of the diverticulum in this position. The X ray picture seems to be typical enough, consisting, as it does, of multiple cup-shaped fluid levels, with accumulations of gas above. On occasion the diagnosis has been made before operation, but this is the exception.

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[1] Bull. Johns Hopkins Hosp., 1933, liii., 1.

[2] Svenska Läkaresällskapets Handlingar, 1933, lix., Nos. 2 and 3.

[1] Costello, C. D.: Brit. Jour. Radiol., October, 1933, p. 70.

[2] Butler, R. Weeden: Brit. Jour. Surg., October, 1933, p. 329.

[3] Fraser, I.: *Ibid.*, p. 183.

Speculation about the ætiology of these diverticula of the small intestine has been active. Duodenal diverticula have been explained on a developmental basis, and the discovery of pancreatic tissue in their walls seems to lend colour to the theory that one is dealing with an extra pancreas of arrested development. But as the diverticulum is always on the concave border of the duodenum, projecting towards the pancreas, and often adherent in some degree to that organ, it would not be surprising if a microscopically thin piece of pancreas were found attached to its wall. Diverticula of the duodenum are apparently single, but in the jejunum and ileum the condition is multiple and may affect the intestine for many feet—which complicates operative treatment. The diverticula arise along the mesenteric border of the gut, and in close relation to the position of the vasa recta. Distension of the lumen of the gut will produce diverticula in normal post-mortem material, and Butler explains this by showing that distension of the gut means tension on the mesentery. When the mesentery is overstretched there is a pull on the vessels running through it to the wall of the intestine and these in turn pull on the bowel wall. Thus the diverticulum, produced apparently by pulsion, is actually produced by traction. Arterio-sclerosis, by destroying the elasticity of the vessels, tends to increase their traction effect, and Butler has found his most striking examples in cases where the arteries have degenerated.

THE ISLETS OF LANGERHANS IN PREGNANCY

THE histogenic relationship of the islets of Langerhans to the acinar tissue of the pancreas has long been debated, and Dr. W. Cramer[1] has now added some significant information to what is known of it. Studying the appearances in rats and mice under different circumstances, he found, amongst other things, that the islets showed a greatly augmented cellular activity during pregnancy. A distinct new formation of islets amongst the acinar tissue could be observed, and he was able to trace the origin of these newly formed structures directly to the centro-acinar cells. That new islet tissue can develop in the pancreas during adult life has long been recognised and many attempts have been made, both by stimulating the gland and by exhausting it, to show a transformation of acinar tissue into islet tissue in the process. These attempts have brought conflicting and inconclusive results, and transition forms between islet cells and acinar cells have not hitherto been satisfactorily demonstrated. The centro-acinar cells of the pancreas, first described by Langerhans, are clearly distinct from the zymogen-containing cells of the acini, and Bensley has traced something of a relationship of them to the islet cells through the cells of the terminal ducts. Cramer has now observed what he regards as direct transformation of the centro-acinar cells into islet cells. The relationship of increased islet formation to pregnancy is interesting in that it may explain, as he remarks, the temporary improvement which is noted in diabetics during pregnancy.

FRESH LIGHT ON STRONGYLOIDES INFECTION

WORK from Prof. E. C. Faust's parasitological laboratory in Tulane University, New Orleans, has added substantially to our knowledge of infection by the nematode strongyloides. H. A. Kreis[1] from the same laboratory had already reported the finding of the long-sought parasitic males of this worm in fæces of infected man and dog, and now Faust himself[2] using various strains of this parasite in 40 dogs has carried the investigation further. The main interest of his striking and far-reaching discovery centres in the lungs and air-passages. In them he has traced development from the filariform infective larval stage (that which gains access to the body by way of the skin) through a pre-adolescent stage in which male and female forms are distinguishable, and an adolescent one in which individuals are apt to migrate, or be carried, to the upper respiratory tract and nearly all levels of the alimentary tract, to a final mature stage in which both sexes are still present though in diminished numbers in the respiratory tract, and impregnated females in all parts of the alimentary canal except the appendix. The intestinal females are normally imbedded in the tissues—mainly those of the duodenum, jejunum, and upper part of the ileum—but are in moderate numbers in the cæcum, colon, and rectum, as also in the epithelium of the cystic duct. It is noteworthy that males have never been found in association with females in the walls of, or even attached to, the bowel. Such association is, however, common in the bronchioles where maturation of the sexes runs parallel. The conclusion then follows that it is in the lungs that impregnation takes place, a habitat for the female worm which, at least on occasions, was made known by the late Prof. Fülleborn some twenty years ago. Faust also produces evidence that in the two cases investigated the female intestinal worms retained sexual activity for about two months only, being soon afterwards set on by massed round cells and destroyed.

A reason for hesitating to accept these conclusions as directly applicable to man is our knowledge that the habitat of the same parasitic worm is not necessarily the same in different animals—that what is the rule in an optimum host is not exactly reproduced in a less favourable one. Such objection is at least greatly weakened by the fact that some of the infective larvæ used by Faust were from a canine strain, and that he reports no difference in behaviour between these and strains from man, ape, and monkey.

For some time past Japanese workers have been satisfied that the filariform and infective larval stage may develop within the intestine from the earlier rhabditiform stage, and that these filariform larvæ may forthwith enter the bowel wall and so presumably bring about continued and repeated auto-infection. By the action of such a strain, designated by Faust as hyperinfective, are reasonably explained those infections which persist for many years in conditions in which ordinary reinfection through the skin can confidently be excluded, particularly in view of his experience as to the short life of the gravid intestinal female. These observations explain the notorious failure of ordinary intestinal anthelmintics in this infection. They do not reach the bronchial mucosa and, so far as their action is direct, they cannot anyhow affect the bronchial forms even if they can do those lying within the intestinal mucosa; so that they leave the source of the latter untouched. In 1928 de Langen, in Java, introduced gentian-violet for the treatment of this infection, with relief from symptoms and in some cases cure; while Faust himself reports[3] that the gravid intestinal females absorb the dye, become free from the mucosa and are expelled by the host; but that their eggs and young larvæ are not killed by the drug. This dye has, however, the significant effect of turning a hyper-infective type into a direct one, so that larval development to the filariform or infective stage does not take place until the stool has been passed for at least some hours, and auto-infection by way of the intestinal mucosa must accordingly cease. The effect of the dye on the pulmonary forms has not yet been reported; knowledge of this will be interesting and may be therapeutically valuable. At present it appears that any drug which can prevent development of those forms which produce auto-infection will, in the absence of reinfection from outside, cause an infection to die out automatically within a few weeks.

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[1] Quart. Jour. Exper. Physiol., 1933, xxiii., 127.

[1] Amer. Jour. Hyg., 1932, xvi., 450.

[2] Ibid., 1933, xviii., 114.

ELECTROCARDIOGRAMS OF THE DYING HEART

A CASE is reported by Hamilton and Robertson[4] in which electrocardiograms were obtained during a fatal heart attack.

> The patient, a man of 49, said that for two years he had had dyspnœa on exertion and attacks of epigastric distress with flatulence. Though not typical of effort angina, these may yet have been related to relative ischæmia of the heart. The only definite objective sign of cardiovascular disease was seen in the electrocardiogram, which showed delayed intraventricular conduction and T wave changes. While at rest in hospital the patient had an attack of epigastric burning and fullness, and the tracing which was immediately taken showed auricular fibrillation, with a slow ventricular rate and ventricular extrasystoles. Nitroglycerin was given, but the distress increased in severity and there was precordial pain with radiation down the left arm. After a few minutes pain disappeared, the tracing then showing auricular fibrillation, a slow ventricular rate, and increased inversion of the T wave. A few minutes later, however, sudden severe pain returned and the patient quickly became unconscious, the tracing showing ventricular fibrillation. This last was recorded for some nine minutes, the waves gradually diminishing in size till they finally ceased. An autopsy showed only slight hypertrophy of the heart, this affecting the right ventricle. There was moderate atheroma of both coronary arteries, but no recent infarction was discovered either on macroscopic or microscopic examination, nor was there any recent clot in a coronary artery.

Hamilton and Robertson describe the attack as one of angina pectoris; and while the patient with Heberden's angina is certainly exposed to the risk of sudden death, we now know that what used to be called a fatal attack of angina pectoris is usually due to thrombosis of the coronary artery. The patient with effort angina is also liable to die suddenly apart from any painful attack, and when this happens death is presumed to be due to the inception of ventricular fibrillation in a muscle whose function is altered by ischæmia. Death in an attack of simple angina without coronary occlusion is, however, probably quite rare. In the case recorded recent coronary occlusion was excluded at autopsy, although the clinical observations were in keeping with such a diagnosis. Auricular fibrillation is not very uncommon during the acute phase of coronary occlusion, but it does not seem to occur in simple angina, and in showing this arrhythmia the case described was certainly exceptional. The statement made in the report that "the diagnosis of angina pectoris was confirmed at autopsy" must be criticised. Angina pectoris is a pain, and not a morbid anatomical condition.

THE ROYAL SOCIETY

ONE of the two Royal medals conferred this year by the president and council of the Royal Society has been awarded to Dr. Patrick Playfair Laidlaw, of the National Institute for Medical Research. Dr. Laidlaw, who was elected an F.R.S. in 1927, is pathologist on the staff of the Medical Research Council, having formerly held appointments in the departments of physiology and pathology at Guy's Hospital. He has made a special study of virus diseases and was successful, in conjunction with Mr. G. W. Dunkin, in discovering a method of preventing distemper in dogs. More recently he has attacked the problem of influenza, and last July he and his collaborators recorded in our columns important observations on the transmission of this disease to ferrets. The Copley medal has been awarded to Prof. Theobald Smith, of Princeton, New Jersey, who was director of the department of animal pathology of the Rockefeller Institute of Medical Research from 1914 to 1929, and is a foreign member of the Royal Society. From the time of his first demonstration, in 1893, that red-water fever in cattle can be transmitted by ticks, Dr. Theobald Smith has made a series of important contributions to parasitology and medicine. He was the first investigator to transfer the insect transmission theory of protozoal disease from the region of hypothesis to the region of established fact.

The following names have been put forward for election as officers of the Royal Society at the anniversary meeting to be held on Nov. 30th: president, Sir Gowland Hopkins, F.R.C.P.; secretaries, Sir Henry Dale, M.D., and Sir Frank Smith; foreign secretary, Lord Rayleigh. The 16 other members of the council include Dr. E. J. Butler, Prof. T. R. Elliott, Prof. A. V. Hill, Prof. J. C. McLennan, Dr. F. H. A. Marshall, Sir Charles Martin, and Prof. E. Mellanby.

THE next session of the General Medical Council will commence at 2 P.M., on Tuesday, Nov. 28th, when the President, Sir Norman Walker, will take the chair and give an address.

NURSES' HOSTEL AT PUTNEY.—Prince Arthur of Connaught last week laid the foundation-stone of a new nurses' hostel which is being built in the grounds of Putney General Hospital. When the building is completed the top floor of the hospital, now occupied by the nurses, will be used for paying patients. The hostel, which will contain 40 bedrooms, will range with the main building in architectural character. The hospital serves a population of 100,000, and it was stated at the ceremony that its 53 beds are inadequate to the demand upon them.

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[3] Jour. Amer. Med. Assoc., 1932, xcviii., 2276.

[4] Canad. Med. Assoc. Jour., August, 1933, p. 122.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

V.—PREVENTION OF DISEASE IN INFANCY

I SUPPOSE that preventive medicine like most other things should begin at the beginning. I would have you realise that life does not begin at birth, but before birth, and if preventive medicine has its application to all periods of life—as we are coming to believe—then it behoves us to consider in what sense it is applicable to life before birth, and the more so as it is clear that, in some very important respects, well-being after birth is conditioned by what has happened during intra-uterine life. I shall deal therefore first with the antenatal aspect of preventive medicine in relation to infancy.

Antenatal

We talk about "quickening" in the fourth month of pregnancy, but from the biological standpoint the vital processes begin from the moment when the multiplication of cells starts in the ovum. There is evidence, experimental and clinical, that the vital processes even at this early period can be influenced by factors which are to some extent under our control.

For at least a century observers have been making investigations into the effects of various agents, environmental, chemical, and physical, in the production of abnormalities in the new-born animal. They have used embryos of various animals, especially the chicken, for their experiments, and have accumulated a certain amount of evidence that alterations of development can be produced by such agents. The practical interest of these experiments lies in their bearing upon the antenatal development of the infant. How far do factors affecting the mother during pregnancy affect the infant before birth and after birth? Certainly if any steps can be taken to enable the new-born child to start out upon the adventure of life with a well-built body and a vigorous constitution, and particularly to prevent the handicap of deformity and the tragedy of a damaged or ill-developed brain, then surely these should be known. Perhaps even this way of stating the problem hardly covers the whole possibilities, for it rather implies that the antenatal development of the infant is related only to maternal factors, whereas experimental observation more than suggests that the paternal element also may have some influence upon the development of the offspring. As a clinical fact this is obvious enough in the inheritance of physical peculiarities from the father, as well as morbid tendencies or conditions transmitted only from the father. Experimentally it has been demonstrated in animals in regard to alcohol.

It has been shown that alcohol injected into the albumin of an egg increases greatly the chance of malformation in the developing chick. This might indicate only that alcoholism in a mother might favour abnormalities of development in the unborn child; but it has also been shown that when a male animal is heavily dosed with alcohol before mating, then, although the female has received no alcohol, the offspring is liable, beyond the average, to show deformity or to be unhealthy and short-lived.

I think one must be very cautious in drawing inferences from animal experiments as to what obtains in the human, but clinical observation does, I think, suggest that where, before the conception of the child, there has been recent alcoholism in either parent, there is risk of faulty development of the unborn child, and it seems likely, in view of these experiments, that frequent indulgence in alcoholic drinks, without actual drunkenness, during pregnancy, may be prejudicial to the child. I draw attention to this possibility particularly because, although proof is impossible; I have thought—as a result of my own observations, as others have from theirs—that sometimes mental deficiency, that most deplorable of developmental failures, occurred in the child through alcoholic indulgence in one parent or in both.

PARENTAL SYPHILIS

A more demonstrable and much more easily preventable cause of disease in the child, both before and after birth, is syphilis in the mother. Here, at any rate, we can demonstrate the presence of the disease in the parent and the preventive value of timely treatment of the mother in securing a normal child is indisputable. There is probably no stage of intra-uterine life at which parental syphilis may not be disastrous to the coming child. It is certain that in the later months of pregnancy actual invasion of the *Spirochæta pallida* into the developing organs of the fœtus, especially the liver, may occur and cause gross changes which result in death, either before or soon after birth. Moreover, the syphilised infant, even if born alive, is apt to be a feeble puny infant with little chance of survival, even if treated for the disease directly after birth. In the commoner cases, where the symptoms only appear in the child a few weeks after birth, the effects are serious enough and may result in a permanently damaged life. Apart, however, from frank symptoms of syphilis in the infant, there can be little doubt that results not less serious may be due to this cause acting very early in intra-uterine life, and amongst these results none is more disastrous for the child nor more expensive for the nation than mental deficiency.

My own figures showed, amongst children with congenital syphilis, 7 per cent. with mental deficiency (in some of these the mental affection began after birth), a proportion 20 times greater than that in the population in general (0·3 to 0·4 per cent.).

Some striking figures were published in America, where it was found that amongst families in which there was no child with congenital syphilis there were 4 per cent. of families with a mentally defective child, whereas amongst those in which there was at least one child with congenital syphilis, 20 per cent. of the families included a mentally deficient child.

These facts emphasise the extreme importance of preventive measures in regard to syphilis as affecting the infant before and after birth.

The detection and treatment of syphilis in the pregnant woman, and still better in the woman who is not yet pregnant, are preventive measures of the first rank. Clinics for venereal diseases and antenatal clinics can do invaluable work in this respect. If adequate treatment is given to the mother as early as the third or fourth month of pregnancy the infant is likely to be born free from the disease; but, inasmuch as most of the organs are already advancing in development before the third month, it is evident that if, as seems probable, syphilis can produce abnormalities of development before that time, the infant is more thoroughly safeguarded the earlier treatment of the mother is begun. I shall refer later to the importance of the detection of vaginal discharge and gonorrhœa in the expectant mother.

DETECTION OF ABNORMALITIES OF PREGNANCY

The value of the antenatal clinic is considerable in another direction. The detection of abnormal pregnancies and of abnormal positions of the fœtus is the first step towards corrective treatment which may facilitate labour. Difficult labour is undoubtedly responsible in some cases for serious cerebral conditions, shown perhaps in convulsions soon after birth, sometimes in irrevocable damage to the intellect, and sometimes in spastic paralysis, and the prevention of these evils is no small matter.

DIET OF EXPECTANT MOTHER

In yet another way the antenatal clinic should be of value to the as-yet-unborn infant—viz., in ensuring, as far as practicable, suitable feeding of the prospective mother. There is some evidence that the diet during pregnancy has an influence upon the development of the unborn child. This sounds so obvious as hardly to be worth stating, but in actual experience it is not nearly so evident as might be expected. It is one of the paradoxes of human reproduction that an underfed, almost half-starved mother may give birth to a well-nourished infant; the infant seems to have preference in Nature's scheme; if intake is not sufficient for both, the fœtus draws upon the mother's capital; Nature will not readily suffer the unborn child to go short.

Experiments on rats have shown that by purely dietetic treatment of the pregnant rat it is possible to influence the average weight of the rats in a litter and not only their weight but their prospect of survival. The increased chance of survival depended in part, but not altogether, upon increased power of lactation in the mothers fed upon a certain diet during pregnancy; egg, particularly, was found to promote in rats the ability to suckle.

No evidence has yet been brought forward, as far as I know, that any particular diet in pregnancy directly influences the human mother's power of lactation; if it were so, it would be a very important means of preventing disease and death in infancy.

But apart from this, if diet in pregnancy has any influence in promoting the nutrition and development of the fœtus, it is of practical importance, for there can be no doubt that the infant who comes into the world vigorous, well-developed, and well-nourished stands a better chance of survival than an underweight weakling, and can face with less risk the ills that infant flesh is heir to. In the most general way it can safely be assumed that liberal and wholesome feeding of the mother during pregnancy must favour the production of a normal and well-developed infant.

How far any strict balance of the various constituents of the mother's food during pregnancy is necessary for the normal development of the child is at present largely a matter of theory and speculation. Experimental observations have been made upon the retention of calcium and phosphorus by the mother, which must, of course, be of importance, especially during the last two to three months of intra-uterine life, when calcification is most active in the fœtus. But no dietetic rules can be laid down with any certainty. Probably milk, eggs, and butter are particularly of value. There is some evidence that administration of cod-liver oil during pregnancy favours the retention of calcium, and so may, to that extent, assist the production of a well-developed infant.

This raises the question how far vitamins play any part in the prevention of those ills which are of antenatal origin. Statements have been made that vitamin A is essential to the growth of the fœtus;
that deficiency of vitamin B in the mother's
during pregnancy leads to debility in the new-
infant; that vitamin D is so important during
development of the fœtus that the expectant mo
should be irradiated two or three times a week!

There is no doubt that vitamin D plays an impo
part in calcification; it is equally certain that calcific
is very active during the last three months of pregn
The calcification of the primary teeth begins about
fourth month of pregnancy, and before the end of
nancy some of the permanent teeth are already becoi
calcified. It is therefore at least possible that
ensuring sufficient vitamin D in the diet of the expec
mother we may promote good development, and
particular, prevent hypoplasia of enamel, not only ir
primary teeth but also in some of the permanent tee
the coming child, and may thus to some extent reduc
liability to dental caries in early life. I said deliber
"sufficient" vitamin D. It is difficult to say wh
sufficiency; but I think that clinical evidence goes to
that the amount of any vitamin requisite to prevent sy
toms of vitaminosis in respect of any particular vit
is extremely small, and that any advantage from floo
the body with vitamins, intensive administration, s
speak, of vitamins, is quite unproven. After reading
of the present-day writings on the subject one can ha
believe that there were babies, and even healthy ba
born in early Victorian times, when people wer
benighted that expectant mothers lived on their ordi
diet, without addition of any special vitamin prepar
or even weekly doses of ultra-violet rays!

Vitamins are, of course, a necessity at all time
life, possibly even a special necessity during p
nancy, but in this country the ordinary diet, un
possibly under very exceptional conditions, cont
all the vitamins that are required; the idea
meritorious "works of supererogation," so to sp
in giving extra supplies of vitamin, rests, to say
least, on no secure foundation.

If the expectant mother can obtain a suffic
quantity of milk, potato, butter, or one of the bet
class margarines, and still more if she can have e
as part of her diet, she will have all that is need
so far as vitamins are concerned. Where eggs are
obtainable fresh herring, perhaps even kippe
herring, may help to make up for any deficienc
vitamins A and D in the diet. Some have rec
mended that for this purpose she should take s
preparation of cod-liver oil, but there must be m
women to whom this would be nauseous.

There is one further point in connexion with
mother which needs mention in guarding agai
risks to infant life. It has seemed to me, as it ha
others, that in some cases the use of "twilight slee
during labour is responsible for temporary feeble
of the vital processes in the new-born infant,
sometimes to a degree which endangers life.

Postnatal

In the new-born child amongst the most import
preventive measures are those taken to avoid

OPHTHALMIA NEONATORUM

About a third of the children who are blind are
as the result of ophthalmia neonatorum. Af
careful cleansing of the eyelids with warm water
a weak boric lotion, one drop of a 1 per cent. solut
of silver nitrate, or of 10 per cent. argyrol, is drop
into each eye. In some maternity institutions
is done as a routine practice, and it is claimed th
the occurrence of ophthalmia in the new-born
been diminished greatly thereby. Certainly wh
there has been any vaginal discharge in the mot
during pregnancy, and a fortiori if she is known
have had gonorrhœa, this precaution should ne

be omitted. Better still is the prevention of the infection by treatment of discharge in the pregnant woman; in this way antenatal clinics can render invaluable service.

DIET IN INFANCY

Throughout infancy the prevention of disease turns largely—perhaps more largely than at any other period of life—upon feeding. There can be no doubt that one important factor in the large reduction of infant mortality which has taken place in recent years has been the diffusion of knowledge on the subject of infant care, especially infant feeding, by the infant welfare movement; the establishment of infant welfare centres and the dissemination of organised instruction of mothers by trained home-visitors and others, have done much to prevent those gastro-intestinal and other disorders which arise from faulty feeding and contribute so largely to infant mortality.

There is no single preventive measure which is so valuable in infancy as breast-feeding. This remains true in spite of the fact that the risks of artificial feeding have undoubtedly been diminished by the more intelligent methods adopted nowadays. Breast milk not only supplies all that is needful for the infant during the first eight or nine months of life, but supplies it in the form most readily utilised by the infant. If this ideal of eight or nine months suckling is impracticable, as it is for many women, any less time is of real value; even a few weeks of breast-feeding seems to have a definite and specific value in, so to speak, establishing the new-born infant, perhaps even in conferring upon it some degree of immunity against infection.

Against all the gastro-intestinal disorders which beset infancy, against rickets and infantile scurvy, against those failures of nutrition which so often make artificial feeding an anxiety, breast-feeding is the surest preventive; and yet nowadays one finds orange juice, cod-liver oil, and sometimes even iron preparations being advised as a routine for infants who are at the breast, as if Nature were in her dotage and woman no longer capable of rearing healthy offspring by Nature's method.

If only these well-meaning theorists would leave Nature's food alone, they would find that, at any rate under the conditions of feeding of the mothers which prevail in this country, there is no likelihood of the breast-fed infant lacking any of those particular essentials which are supposed to be supplied by the additions which I have mentioned. Preventive measures of this sort, where none are needed, are, as I have many times seen, simply mischievous, resulting, as they are apt to do, in disturbance of digestion.

SCURVY

Very different is the case of artificial feeding. Here the question of vitamin sufficiency becomes a point of importance in the prevention of disease, and in these days when dried milk so largely replaces fresh milk, and when "fresh milk" so often means pasteurised or boiled milk, it is a wise precaution to give vitamin C in the form of fruit juice or tomato juice when the infant is about 3 months old; nowadays it is often given earlier, but as it certainly causes digestive disturbance in some infants, it seems a pity to give it earlier than it is needed. Amongst a very large number of infants fed on all sorts of infant foods, in days when it was not customary to give fruit juice at all, I have never seen any indication of vitamin-C deficiency under the age of 5 months, and I may add here that I have not seen a single instance of such an occurrence in a baby whilst it was breast-fed.* The amount of fruit juice which is required for the prevention of vitamin-C deficiency, as shown in infantile scurvy, varies according to the character of the artificial food which is being given. With milk which is only pasteurised, or heated till bubbles just begin to rise, 4 teaspoonfuls of orange or grape juice daily will be enough, but with more scorbutic preparations, such as the various advertised "infant foods," and any food in which the milk is predigested, quite 8 teaspoonfuls of orange juice or 12 of grape juice (which is not quite so potent as orange juice) may be required daily. This is much less likely to disturb digestion if it is given divided into three or four small doses than if given in a single dose.

When an infant has reached the age at which potato can form a part of the regular diet, generally about 9 or 10 months, the need for fruit juice as a purveyor of vitamin C no longer exists; potato is so potent in vitamin C that although cooked and given in comparatively small quantities, it cures infantile scurvy very rapidly.

This is not to say that raw fruit has not its own value quite apart from any vitamin content; fruit and vegetable not only have some laxative value, but also supply various salts and moreover are pleasant variants in the diet. But raw fruit is a common cause of digestive troubles in young children—raw vegetables, recommended by some theorists, even more so—and one often finds that although a child is already taking potato as part of his regular diet, he is being plied in addition with fruit or fruit juice under the mistaken idea that this is needful to prevent deficiency of vitamin C, and as a consequence is suffering with chronic intestinal indigestion.

RICKETS

Amongst the preventable diseases of infancy rickets was formerly one of the least often prevented. In London it is now very much less common than it was 40 years ago, thanks chiefly to the great improvement in the feeding of infants; and no doubt in quite recent times the extensive use of cod-liver oil as part of the daily régime (it is an ingredient in some of the artificial "cream" used in infant feeding) has still further diminished the occurrence of rickets.

It would be a mistake to suppose that in the absence of such addition of vitamin D as is afforded by cod-liver oil, hand-feeding necessarily entails any considerable risk of rickets. Quite apart from theoretical considerations of the varying quantities of vitamin D present in cow's milk, the fact remains that the vast majority of infants fed upon cow's milk diluted as little as will make it digestible for the particular infant do not get rickets. In days before vitamins were heard of, and when the feeding of infants amongst the poorer class was haphazard and unintelligent, 30–40 per cent. of children under the age of 3 years attending hospital were suffering with frank rickets, but in that same period, amongst the better-off class, where hand-feeding was common enough but more carefully regulated, rickets was quite uncommon, though no one thought of giving cod-liver oil as a preventive to a healthy child.

Recently the potency of halibut-liver oil has led to its use as an alternative to cod-liver oil. Some years ago, at the suggestion of Dr. S. S. Zilva, I experimented with the oil of the liver of the coal-fish and found that this also was very potent in the cure of rickets as proved by X-ray investigations. I do not think that—apart from possible reduction in the dose of nastiness—there is any advantage in the use of a preparation containing a particularly large amount of vitamin D. Clinical evidence seems to me to indicate with regard to vitamins in general that enough is as good as a feast, there is nothing gained by excess, and if we may judge from experiment upon animals, there may even be harmful results from excess. Probably the plain cod-liver oil with its contribution of vitamins A and D is at present the most practicable and useful preventive, where any is needed, against rickets.

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* Perhaps I ought to qualify this by saying that many years ago a surgical colleague showed me as a unique curiosity some swelling of the gum in a breast-fed infant (without other symptoms of scurvy). He thought this was an instance of scurvy occurring in a suckling, but it seemed to me at the time inconclusive.

There are, however, infants who have difficulty in digesting fats, and for them, one of the preparations in which vitamin D is present without fat or with very little fat may be more suitable.

After the period of breast-feeding there are no foods so valuable in the first two years of life—the period of infancy proper—for the prevention of rickets as milk, butter or good margarine, and eggs, which supply vitamins A, B, and D, and if the milk is fresh, C also.

Of all the vitamins the one which is least likely to be deficient in the diet of any child in this country is vitamin B, which is present so widely in foods of all sorts and is so little likely to be destroyed by any ordinary cooking procedure that the infant can hardly escape getting a sufficiency. It is pitiable to see parents who can ill-afford it spending money upon preparations advertised to supply vitamin B, under the mistaken impression that they are a valuable addition to the diet and prevent a lack which might be serious to the child.

DENTAL CARIES

The prevention of dental caries is one of the possibilities that have emerged from experimental work upon the effects of diet. An adequate supply of vitamin D seems not only to have some preventive value, but when there has been deficiency of this vitamin its administration in sufficient quantity may even arrest caries while it is still in an early stage. The importance of cleaning the teeth, especially at night, to clear away the debris of food which collects about the neck of the tooth, can hardly be doubted; and the tendency of some foods, for instance, biscuits and chocolates, to collect thus has been thought to make them specially apt to promote caries, unless the teeth are cleaned sufficiently often and regularly. From the time when an infant has six or eight teeth, which will usually be about the end of the first year, they should be cleaned with a soft brush daily, and I know nothing better for this purpose than one of the liquid preparations of magnesia. Food which encourages mastication may be, in theory, of value as tending to prevent stagnation of food between and about the teeth, but common sense is needed in judging how far this is practicable. I have many times seen children wasting and evidently suffering with chronic intestinal indigestion from the constant taking of coarse, rough, or hard food given deliberately with the idea of encouraging mastication. Children are apt to be inveterate food bolters, and if they can be taught to masticate thoroughly, so much the better, but if they cannot then their food should certainly not be such as to require a large amount of mastication.

INFECTIOUS DISEASES

Passing now from dietetic preventives, I want to say a word about certain inoculations which are used in infancy.

Vaccination against *small-pox* is so general and of such indisputable protective value that I need only mention it as a measure which should be adopted for every infant unless there is some special reason to the contrary. In maternity institutions it is often done in the first week after birth, but as some infants, especially if they cannot be breast-fed, do not start gaining weight satisfactorily at first, there are advantages in waiting until the baby is about 2 months old; if by that time the infant is making good progress, the transient disturbance of vaccination will not matter.

Inoculation against *tuberculosis* is a very different matter. Recently on the Continent attempts have been made to safeguard the infant who is born into a family where there is already tuberculosis by oral administration of an attenuated tubercle bacillus, the preparation known as B C G (Bacillus Calmette-Guérin). This is given in three doses during the first ten days of life. It is supposed to confer immunity for about two years, and clearly would be of great value if it were a safe procedure; for the maximum mortality from most forms of tuberculosis in childhood is during the second year. Unfortunately, however, there seems to be very real risk of producing a serious infection with tuberculosis by this method so that it has not found favour in this country.

The prevention of tuberculosis in infancy resolves itself at present into two measures: the avoidance of association with persons suffering from active tuberculosis, and prevention of infection by food, especially by milk and cream. Pasteurising, scalding, or boiling all the milk which the child takes is no safeguard if in the meantime the child is having fresh cream which is at least as likely, some think more likely, to contain tubercle bacillus. Butter also, unless made from pasteurised milk, is a possible source of infection, though probably much less likely than milk or cream, so that the small risk from it is usually ignored. If it were compulsory that English butter, like Danish imported butter, should be made from pasteurised milk, this risk also might be eliminated. The whole question of the sale of unpasteurised milk and cream is a very serious one with regard to the prevention of tuberculosis, especially in infancy and childhood. It is not such a simple matter as it sounds. Apart from economic difficulties, even if compulsory pasteurisation were introduced, it is by no means certain how this would affect the occurrence of tuberculosis. My own belief is that in view of the large numbers of cases in which tuberculosis in early childhood is due to milk infection, such a measure would reduce the incidence of tuberculosis at that age considerably, but it is also conceivable that more or less immunity from tubercle is gradually acquired by many children as a result of ingestion of very small quantities of tubercle bacilli, and that if these tubercle bacilli were entirely excluded from the food for the first few years of life, the child would later fall an easy victim to the disease on any exposure to tuberculous infection. I know of no proof that this is so, but I have seen a few instances in which the very quick infection of the child after cessation of the precautionary boiling of all milk suggested such a lack of immunity.

INFANTILE DIARRHŒA

One of the chief causes of infant mortality is that group of infectious disorders which are classed together as infantile diarrhœa, gastro-enteritis, or ileocolitis. When I began work in some minor post at a children's hospital 40 years ago, the wards from July to September presented a veritable shambles, a massacre of the innocents. The infants came in dying, or to die, with summer diarrhœa, and if they had not already contracted it before admission, they soon added it to the illness for which they had been admitted.

The preventability of this infectious diarrhœa in infancy is suggested by the reduction which has taken place in the annual mortality from this cause. In the year I mentioned, 1893, there were in England and Wales 20,722 deaths from diarrhœal affections in the first year of life, whereas in 1931 (the latest available figures) there were in England and Wales 3284 deaths from this cause in the first year of life. The years I have mentioned are not exceptional. Statistics, however, are fallacious, for this apparently enormous reduction must be correlated with the number of infants born; in 1893 there were 914,542 live births in England and Wales, whereas in 1931 the births had fallen to 632,081; so that a reduction of about one-third in the number of deaths from diarrhœa would not prove any diminution of the incidence of fatal diarrhœa.

The reduction, however, is much more than one-third, and I think we are justified in the belief that preventive methods have reduced very considerably the incidence of fatal diarrhœa in infancy.

Cleanliness in the handling of milk has no doubt been one factor in this improvement. From the cowshed to the nursery methods have improved; the risk of contamination by dust, by dirt, by flies, is now very generally recognised and to some extent prevented. The bottling of milk, and, still more recently, its sale in cartons, have helped towards cleanliness. Probably the extensive pasteurisation of milk, and still more the widespread use of dried milk, have contributed largely to the prevention of these gastro-intestinal infections in infancy, and it is by encouraging these safeguards against bacterial infection of milk that we may hope to reduce still further the mortality from diarrhœa in infancy.

Valuable as such precautions are, they are none of them such a safeguard to the infant against fatal diarrhœa as is breast-feeding; my own figures, published many years ago, showed that 96 per cent. of the fatal cases of diarrhœa up to the age of 9 months were in infants partially or entirely hand-fed.

FRESH AIR AND SUNLIGHT

In the prevention of infections, as in the prevention of some of the other disorders of infancy, there are two factors of general application to which I have not alluded hitherto, viz., fresh air and sunlight. The value of these has been emphasised in recent years to the great advantage of all periods of childhood. The difference between the pale infant who has his day sleep cooped up in a stuffy room and the rosy healthy infant who sleeps out in his pram in the open air is often sufficiently obvious. Open windows and sunshine profit an infant as they do an older child, probably making him actually more resistant to infection, but it is necessary to mention that there is also a time when warmth is more important even than fresh air. An infant who is feeble, whether through illness or from congenital debility, especially one that is premature, may have his chance of survival jeopardised by the fresh air enthusiast who forgets that the infant can ill spare the energy used up in maintaining his body-heat, and that to increase the demand upon his energy by surrounding the infant with cold air is sometimes actually to endanger his life.

EFFECTIVENESS OF PREVENTIVE MEASURES

The rôle of prevention in the safeguarding of health in infancy is clearly shown by the fall in infant mortality which has taken place in the last 40 years; in 1893 the infant mortality-rate (for infants under 1 year of age) in England and Wales was 159 per 1000, in 1931 it was 66 per 1000. The improvement began about the beginning of the century.

Whatever may be the particular factor which has played the chief part in this enormous saving of infant life, there can be no doubt that it is preventive. Curative measures have improved in this period and have certainly contributed their share to the saving of life, but only in very small proportion compared to the large contribution by preventive measures. In a general way the dissemination of knowledge of the elementary facts of the hygiene of infancy has probably done most to lower the infant mortality-rate and at the same time to improve the standard of health in infancy and thereby to lay the foundation for a healthier manhood and womanhood.

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POST-GRADUATE LECTURES

DURING the past five weeks we have published parts or summaries of 15 lectures given at the autumn post-graduate courses of London medical schools. The series ends this week with those of Dr. Riddoch and Mr. Dix, both of them delivered at the London Hospital.

HEADACHE

(DR. GEORGE RIDDOCH)

FOR the investigation of headache a plan is necessary. Inquiry should be made into: (1) the quality of the pain; (2) its focus and direction of spread; (3) its continuity or intermittency; (4) its time of onset; (5) the conditions which precipitate it, aggravate it, or give relief: and (6) other symptoms associated with it, such as cutaneous tenderness, giddiness, nausea, or vomiting. On the information thus obtained an attempt can be made to classify headaches, if we realise that from incomplete knowledge the classification will be imperfect.

I propose on this occasion to pay special attention to two groups of headaches which seem to be due to gross variations in intracranial pressure, and which occur as symptoms of widely differing morbid states. They are met with every day, are often severe, and are frequently amenable to simple methods of treatment.

In the first place, two separate kinds of headaches from this cause are to be distinguished—those in which the intracranial pressure is excessively high, and those in which it is excessively low.

INTRACRANIAL HYPERTENSION

The high pressure headache is usually described as an ache with superadded throbs or shoots of pain, which are provoked by coughing, sneezing, straining, stooping, sudden exertion, or excitement, in fact anything that raises pressure within the skull. It may be frontal, temporal, or occipital, but tends to be general when severe. For long it is paroxysmal, and it may continue to be so if the underlying pathological process is not progressive. The posture of the patient influences its occurrence to a striking extent. Thus, after any considerable period in the recumbent position, headache almost invariably develops, and this is the explanation of the "morning headache" of cerebral tumour. During sleep the blood pressure falls by 15–30 mm. Hg, which compensates for the effect of gravity. Towards morning, however, sleep becomes lighter and it rises to the diurnal level, with the result that pressure within the skull increases, and, if it is abnormally high, the headache comes on. Such headaches are often accompanied by giddiness and vomiting, with or without nausea.

Headaches which more or less conform to this type are common to diverse pathological states—for example, meningitis; following concussion, epileptic fits, cerebral hæmorrhage, thrombosis, or embolism; associated with arterial hypertension, emphysema with bronchitis and heart disease, if there is cyanosis after a general anæsthetic or alcoholic intoxication; and in anæmia, migraine, and so on. The common pathological factor is raised intracranial pressure, the causes of which may be :—

(1) *Obstruction of the circulation of cerebro-spinal fluid.*—If there is blockage of the cerebro-spinal fluid circulation—e.g., at the foramen of Munro or the aqueduct of Sylvius—local or general internal hydrocephalus develops. Tumours and meningitis are the common causes of hydrocephalus from interruption of outflow. There is also good reason for believing that as the result of adhesions due to bleeding from trauma, or to meningitis, the cerebro-spinal fluid circulation may be impaired at the opening in the tentorium cerebelli in which the mid-brain lies. External hydrocephalus in the posterior fossa, as well as internal hydrocephalus, would then result.

(2) *Venous hypertension.*—Obstruction of venous outflow from the skull, as in emphysema, heart failure, and more temporarily in an epileptic convulsion or asthmatic attack, gives rise to intracranial hypertension in two ways—by impeding the absorption of cerebro-spinal fluid into the sinuses, since the pressure within the sinuses is increased; and by increasing the production of cerebro-spinal fluid.

(3) *Arterial hypertension.*—The mechanism by which general arterial hypertension gives rise to headache is perhaps not simple, for, in addition to raising the average pressure within the skull by increase of blood volume, it may lead to excessive production of cerebro-spinal fluid. At all events, in cases of high blood pressure morning headache is common, and hurrying, stooping, coughing, and straining provoke headache of the hypertension type.

(4) *Cerebral œdema.*—Effusion of fluid into cerebral tissues follows obstruction of venous outflow—e.g., in emphysema or heart failure. Such abnormal states as an epileptic fit, an asthmatic attack, or a bout of severe coughing, which cause temporary congestion, and the transient anæmia of concussion and the paralytic phase of migraine (hemianopia, aphasia, hemianæsthesia), which are presumably followed by vascular engorgement with œdema, are causes of headache of the hypertension type. Further, the "intoxication" headaches from alcohol, chloroform, ether, and uræmia are hypothetically due to cerebral œdema from either increased permeability of the capillaries or increased extent of the dilated capillary field.

Alleviation of pain without immediate resort to analgesic remedies ought to be the basis of rational symptomatic treatment. In the case of headache of the hypertension type this principle, in essence, will be successfully applied if pain is relieved by reducing the pressure within the skull to safe limits. This can be done in various ways.

Regulation of posture.—We have seen that the horizontal position, from the influence of gravity, tends to provoke headaches of hypertension type when intracranial pressure is already elevated. As a means of relief from the morning headache the patient should, therefore, be instructed to lie in bed with his head and shoulders well raised with pillows. If he is ill and tends to slip down in bed, he should be kept in position by a sling under his buttocks and attached to the upper bed-posts, or by a tilt in the middle of the bed as is used in abdominal cases. Ambulant patients should be warned against stooping.

Dehydration.—Abstraction of fluid from the body and so from the cranium is a method for giving relief from hypertension headaches that ought to be more commonly used than it is. The method is an old one, and, so far as I know, was first advocated by my old teacher, Prof. Matthew Hay, who advised the administration of a dose of Epsom salts in the morning before breakfast sufficient to give a fluid motion. Many old men who are attached to good living, and whose blood pressure is higher than it ought to be, gain comfort from it, as well as many young men who do not keep within the limits of their tolerance for alcohol and food. At all events, salts by mouth in sufficient dosage is most useful as a means of dispelling the milder headaches of this class. If taken early enough in the stage of premonitory symptoms it frequently checks the onset of the headache of migraine.

In the case of headache from intracranial tumour or cerebral contusion the rectal method of administration of hypertonic saline is more beneficial. It should be given as a 50 per cent. solution—for example, 3 oz. of magnesium sulphate in 6 oz. of water—and injected slowly through a catheter and retained for 20 or 30 minutes, once or twice a day. Sometimes a solution of this strength is irritating to the rectal mucous membrane, and if so, 8 oz. of a 25 per cent. solution can be used instead. More rapid results are obtained by giving hypertonic saline intravenously. For this purpose 70–100 c.cm. of a 15 per cent. sterile solution of sodium chloride in distilled water or 35–50 c.cm. of a 30 per cent. solution is commonly employed. Alternatively, 80 c.cm. of a 50 per cent. solution of glucose in normal saline can be given, and it has the advantages that its effects are more sustained and it has some nutritive value. Care, however, must be taken that the glucose is pure, and has been kept dry and free from mould. Magnesium sulphate, because of the risk of anæsthesia and respiratory paralysis, should not be given intravenously.

When hypertonic salines are being employed for the purpose of dehydration, the intake of fluids should, of course, be restricted.

Lumbar puncture.—Reduction of pressure within the skull with resulting relief from hypertension headache can be attained more directly by lumbar puncture, but the applicability of this method is more restricted. It should rarely be used in cases of cerebral tumour, and never when tumour of the posterior fossa is suspected because of the risk of bulbar compression from herniation of the cerebellar tonsils through the foramen magnum. Nor is it a convenient therapeutic agent in arterial hypertension and chronic emphysema. It is, however, of considerable value in cases of meningitis and uræmia.

Venesection has largely fallen into disfavour, partly as a reaction from its extensive and frequently indefensible practice by our forebears; but it still has its uses, especially in venous congestion from chronic emphysema and heart failure. In addition it ought, I feel, to be advocated more often than it is in chronic nephritis with high diastolic pressure, especially in thin patients. The removal of 8–10 oz. of blood every six or eight weeks gives considerable relief from headache when other measures fail.

INTRACRANIAL HYPOTENSION

The group of headaches due to lowered intracranial pressure is perhaps smaller. But it is curious that very little attention has been paid to them, for they are not uncommon, and are often amenable to rational methods of treatment.

As an example let us take the headache that so frequently follows lumbar puncture. If the patient is allowed to get up soon after the puncture has been performed, within an hour or so he may begin to complain of an ache, which increases in intensity until, if he persists in the upright position, it becomes intolerable. It commonly commences in the front, top, or back of his head, but tends to become general, and is frequently associated with a sensation of pressure and tightness. Prominent features of the headache are its continuity so long as the patient sits up, and its relief when he lies down. It is the antithesis of the hypertension headache.

The lumbar puncture headache is probably the result of drainage of cerebro-spinal fluid through the opening in the theca made by the lumbar puncture needle, and is the most pronounced example of headache of the hypotension variety. But many headaches met with in practice, from their clinical features, appear to belong to this group. For example, the headaches associated with abnormally low blood pressure, as in Addison's disease, decrescent arterio-sclerosis, excessive vomiting, diarrhœa, or bleeding, as well as some cases of neurasthenia and cerebral contusion. The mechanism of production of the pain is obscure, but it may be due to traction on the dura and its invaginations, or it may be vascular in origin.

Symptomatic treatment.—The underlying principle of treatment is to raise the pressure within the skull to normal limits. With regard to lumbar puncture headaches, their prevention is largely in our own hands. A needle of small diameter, which ought to be sharpened for each operation, should be employed. If possible, the theca should be punctured once only (chiefly but not invariably a matter of practice and care), and after the operation the patient should be made to lie flat for at least 12 hours. If these precautions were taken lumbar puncture headaches would be less common.

For the headaches associated with arterial hypotension and dehydration from repeated vomiting, diarrhœa, and bleeding, the administration of hypotonic fluids, such as ordinary drinking water by mouth or distilled water intravenously or per rectum, is reasonable. Pituitrin and other peripheral vaso-constrictors can, if necessary, be employed in special circumstances, but they can give only temporary relief. The recumbent posture, however, is often very helpful. Patients should sleep with the head low.

A full stimulating diet, moderate exercise, and general massage are beneficial in those cases in which headaches of this kind are associated with low blood pressure in neurasthenic subjects.

PROSTATIC OBSTRUCTION NOT REQUIRING OPERATION

(MR. VICTOR DIX)

SOME degree of disturbance of micturition is so common in the late fifties and early sixties that it is perhaps not an exaggeration to say that one in every four of us will at some time begin to take a personal interest in his own prostate, and will wonder whether a prostatectomy is ultimately going to be necessary in his case. This is also true of the general public. There can be few men over the age of 55 who do not know something of the prostate and its possibilities, and to this is added an almost universal dread of the operation of prostatectomy. This dread is not entirely justified at the present time, but is a relic of days when the methods of pre-operative investigation and preparation were less advanced than they are to-day. At the same time, only an enthusiast would be prepared to state that a prostatectomy can be undertaken with as little anxiety as, for example, an appendicectomy, in a patient of the same age.

For some years there has been an additional inducement to neglect the old, well-tried and simple methods of managing cases of minor prostatic obstruction. The great advance during this time in the production of instruments capable of resecting portions of the prostate through the urethra render this operation in the hands of an expert one of very little danger, and one that may almost be called a minor procedure. "Minor" it certainly is not, but it will always remain so from the layman's standpoint because there is no visible external cutting. We are still on the crest of a wave of enthusiasm for this method with its technical appeal to the surgeon, and its "non-cutting operation" appeal to the layman, and it is well to recall that there is bound to be a tendency, while the enthusiasm lasts, to apply it to cases where old-fashioned, sound and entirely non-operative methods will relieve the patient's symptoms with equal certainty. This statement must not be construed as a condemnation of transurethral methods. This is far from its intention, since the results of transurethral operations in suitable cases admit of no criticism. What we should be careful to avoid is an immediate resort to our technical resources in the case of every old gentleman who has to pass urine twice at night and has some delay in starting micturition during the day. The sound urologist must decide in each case whether prostatectomy, transurethral methods, or careful non-operative management is required; not merely which of the two former suits the case.

We may state then that there are patients suffering from disturbance of micturition, due to an enlarged prostate, who do not, and may never, require any operative treatment at all. Careful management makes the life of these patients more than bearable. Patients who do require operative treatment, but who refuse in any circumstances to submit to it, can also be made comfortable with careful management of their lives. Here, however, the responsibility for the consequences of avoiding operation are the patient's and not the surgeon's. In what follows I do not propose to enter into the question of the varieties of obstruction at the neck of the bladder, and I shall speak principally of the patients with minor symptoms. Catheter life will not be considered.

In dealing with a patient of this type it is necessary in the first place to have a general conception of what I have termed "minor prostatic symptoms." To take an example, I should like to suggest the case of a man who for six or twelve months, or perhaps longer, has had to get up once or twice to pass urine in the early hours of the morning, and during the same time has noticed that his stream is a little less forcible than it was previously. There is perhaps also a little delay in starting to pass urine when he wants to do so. All these difficulties may be exaggerated in cold weather and such patients are often first seen in the late autumn or early winter. Other examples that suggest themselves are those of patients in whom there is a large functional element, superimposed on a real basis of prostatic symptoms; or of patients in whom social activities, important business, or other extraneous causes render postponement of operation advisable for six months or more. In all these examples it is assumed, of course, that there is no obvious suggestion in the patients' history of damage to the kidneys.

A certain minimum examination is necessary before it can be decided that operative treatment is unnecessary. The three examinations that should never be missed are: a rectal examination, measurement of the residual urine, and estimation of the blood-urea. If the rectal examination reveals nothing even faintly suspicious of malignancy, the residual urine is no more than an ounce or two, and the blood-urea is less than 40 mg. per 100 c.cm., we may assume that a delay of six months before the case is reviewed again will do no irreparable damage, and will not render any subsequent operation more dangerous, should it become necessary because the symptoms are progressive. It may be well to state here that the reactions of the pupils, and an examination of the knee-jerks—or, better, of the ankle-jerks—should be included in the general examination in every case. This minimum examination has the advantage that it can be done by anyone, anywhere, and demands no special facilities for its completion.

The ideal examination is somewhat longer, and it is in fact a modified complete urological examination. It should include, in addition to the above, radiography of the urinary tract, microscopic examination of the prostatic fluid, an indigo-carmine function test, and a cystoscopy. Of these the examination of the prostatic fluid and the function test require little, if any, special knowledge, and can be added by the thorough practitioner to the three basic tests. A complete examination as outlined is an invaluable standard for comparison when the patient comes up again at the end of six months, in order to have his case reviewed. A very accurate idea of the rate of progress of a prostatic enlargement can be obtained in this way.

Two small but important practical points may conveniently be mentioned here. In measuring the residual urine the catheter should be passed immediately after the patient has emptied a normally distended bladder in the standing position. If a local anæsthetic has been used for the urethra, the urine should not be passed before its use. After the anæsthetic has acted the patient should rise and empty his bladder as completely as he can. He should then lie down again and the catheter can be passed. This is rather more troublesome for the patient than emptying his bladder before the local anæsthetic, but the method is much more accurate since the amount of urine that can be secreted by a nervous patient during the ten minutes that the local anæsthetic is acting could cause a serious error when the residual urine is small in amount. While the catheter is still in place an intravenous injection of 5 c.cm. of 0·4 per cent. indigo-carmine may be given. Specimens are collected at the end of five, ten and fifteen minutes; and in a perfect test the first is coloured, the second deep blue and the third also deep blue, but slightly fainter than the second.

If the result of either the short or the long examination is satisfactory, it is the duty of the surgeon to explain to the patient that his symptoms are due to slight prostatic enlargement; that many men of his age are troubled in the same way; that some of them have to have operative treatment, while others do not; that there is no way of saying at once to which class the patient belongs; that there is no danger in delay if the correct mode of life is adopted; that the correct management of his case will probably cause his symptoms to be less troublesome, or to disappear; and, most important of all, that he must be examined again and have his case reviewed at the end of six months, and afterwards at six-monthly or longer intervals. Few intelligent patients will fail to appreciate the wisdom of the above course and should operative treatment ultimately be necessary, becaus the condition is *progressive*, *they will face it* with th feeling that it is inevitable, and that everythin possible has been done to avoid it. There will be n lingering doubts about its necessity and this attitude of the patient is of importance to his ultimat recovery.

The life of a patient with mild prostatic obstructio must be regulated to avoid attacks of retention, o partial retention; there must be no serious loss o sleep; the urinary symptoms during the day mus not cause intolerable social inconvenience; and ther must be no progressive renal damage.

Attacks of retention are precipitated by postponement of micturition, excessive drinking of alcoho severe chill and, rarely, by riding and by sexual excitement. These should therefore all be avoided as fa as possible. Postponement of micturition especiall should never occur and prolonged postponement is very real danger. The question of what is excessiv drinking is always difficult. It would perhaps b safest to avoid alcohol completely, but little harm i to be anticipated from a moderate consumption o alcohol with meals. Apart from meals it is bes avoided. Chill is often unavoidable, but attention t simple details, such as the changing of wet clothes o socks, would prevent many attacks of retention. I is unwise to suggest to patients that they should alte their sexual habits and there is no proof that sexual intercourse influences the tendency to retention. On the other hand, sexual excitement without satisfaction, as in all prostatic conditions, will undoubtedly cause trouble. The likelihood of progressive damage to the kidneys is remote if the patient fulfils his obligations, and comes again for examination at the end of six months.

Loss of sleep can often be avoided by two very simple measures. The amount of fluid after 6 P.M. may be restricted, provided that it is carefully explained that a restriction in the total daily intake of fluid is harmful and not beneficial. The second measure adopted is the use of the urine bottle. This is not always satisfactory because micturition may only be easy in the standing position, but in patients who can use it in bed it is a real comfort. Many of them find that getting up banishes sleep for an hour or two, while the use of the bottle in bed leaves them almost unconscious of the fact that its use has been necessary, and sleep is not interfered with.

There is no need to suggest any special diet, but it is necessary that condiments, spices, and other articles of food that burn the tongue, should be avoided if they cause trouble. The intelligent patient will soon discover for himself whether any of these substances affect him personally, when attention has been drawn to the possibility of their doing so.

There are two other accessory aids to comfort that I almost hesitate to mention lest I should be represented as saying that they cure the enlarged prostate. The first is prostatic massage. It will often be found in elderly bachelors, or in married men whose prostatic activity has outlasted their sexual activity, that there is a large excess of fluid in the prostate. When the prostate is merely palpated during examination, or after one gentle stroke of the index finger at the beginning of massage, fluid will be found to drip freely from the penis. Microscopic examination will distinguish between the normal fluid of a distended prostate and the pus of an old chronic prostatitis. Prostatic massage twice a week for three or four weeks, when there is distension will often cause considerable alleviation of symptoms. The second method is particularly applicable to the nervous patient with functional as well as organic frequency. If such a patient is advised to wear a rubber urinal inside his clothes whenever the situation is likely to be such that passing water at once would be inconvenient, he will almost certainly never use it for the purpose for which it is designed. This is not because he prefers to postpone micturition until a convenient opportunity occurs, but because the desire to pass water is unlikely to make itself felt at awkward moments, when he is secure in the knowledge that should he wish to do so he could pass water at any minute.

Drugs play a minor part in treatment. I should like to mention that the old-fashioned remedies of hyoscyamus and bromides in full doses have still their use, and the Elixir Saw Palmetto and Santal Compound (Parke, Davis) often has a remarkable sedative effect.

In conclusion I should like to say that I have made no attempt to mention all the non-operative means that have been used to relieve prostatic symptoms. I need only mention X rays, diathermy and injections of hormones and glandular preparations to indicate that there is a large field I have left untouched. It has been my intention rather to show what can be done without special equipment to relieve the physical disabilities and mental anxiety of patients with early prostatic symptoms, and to enable the general practitioner to steer a middle course between the danger of undue delay in prostatic cases, and the imprudence of immediate recourse to operative treatment, whether transurethral, suprapubic or perineal.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Doctor's Claim Succeeds

LITIGATION over doctors' fees often involves a dispute of facts rather than of law. Although each instance depends upon its own special facts, the general trend of decision is not without interest. In the usual absence of written contracts, is the court to accept the version of the doctor or of the patient? The doctor's version was substantially upheld in the following case which came before a midland county court towards the end of the summer. He claimed £23 6s. 6*d*. for professional services to the defendant's daughter. His evidence was that he treated her for neuritis in April of last year and that, as radiological treatment proved unsatisfactory, he advised a change of scene. With the defendant's approval, he said, he arranged for the daughter to stay with his mother-in-law, at a house belonging to him in France, for five weeks at a charge of £3 a week. He had remitted 250 francs to Paris in this connexion and, by way of further corroboration of his evidence, it appeared that the daughter had written a letter of appreciation. On the other side the defendant's version was that the doctor had offered the daughter a free holiday, nothing having been said about payment. The daughter had been given insufficient food, and the hall of the house in France had been flooded owing to a choked drain. In any case, argued the defendant, if there really was a liability to remunerate the plaintiff doctor, the daughter was personally liable. As for the daughter's letter of appreciation, this had been written under compulsion; she had telephoned to ask for assistance and would otherwise have had to apply to the British consul.

There was thus a typical dispute of fact between the two parties. The county court judge disallowed one item of five guineas in the claim but, apart from that, gave judgment for the doctor with costs, thus making it clear that the plaintiff's version was accepted. Recourse to the services of a professional man sets up an implied promise to pay for them. The arrangement of accommodation for a patient requiring a change of scene added a special feature for which, had the plaintiff foreseen the defendant's repudiation of liability, a written agreement would doubtless have been secured.

Insulin Treatment and Charge of Drunkenness

To a charge of drunk and disorderly conduct, heard at the Westminster police-court on Nov. 1st, the defendant replied that he had been undergoing insulin treatment and that the symptoms of his reaction thereto were mistaken for those of alcoholic intoxication. The police gave evidence that they had been called to a hotel where the management had refused to serve the defendant with intoxicating liquor; he had declined to leave and was ejected. At the police station he informed the divisional surgeon of his insulin treatment; he had taken a dose of 28 units. The fact of his treatment was confirmed by a witness who told the magistrate that the defendant had often been seen under the influence of insulin. The magistrate took into account a medical statement that a moderate amount of insulin combined with a moderate amount of alcohol would produce the effect described. He refrained from registering a conviction against the defendant and discharged him on probation, subject to his payment of the doctor's fee; this was in substance a finding of "not guilty—but don't do it again."

It is worth noting that his offence (being drunk and disorderly) was presumably charged under Section 12 of the Licensing Act, 1872; this would require proof of actual drunkenness. It is to be distinguished from another insulin case, recently discussed, where the defendant was charged under Section 15 of the Road Traffic Act with driving a motor vehicle when under the influence of drink or a drug to such an extent as to be incapable of having proper control of the vehicle. This latter charge does not require proof of actual drunkenness, but merely of "having drink taken." The Road Traffic Act provides that anyone liable to be charged under Section 15 shall not be liable to be charged under Section 12 of the 1872 Act.

Diabetic Patients and Motoring

The diabetic patient has also to remember the earlier sections of the Road Traffic Act, namely, those which require physical fitness in an applicant for a driving licence. The statutory form of application for a licence compels the applicant to declare whether he is suffering (*a*) from specified disease or disability which amounts to a disqualification (epilepsy or liability to sudden attacks of disabling giddiness or fainting), or (*b*) any other disease or physical disability which would be likely to cause his driving of a motor vehicle to be a source of danger to the public. There is of course a penalty for holding or obtaining a driving licence while disqualified and also for knowingly making a false statement in order to obtain a licence. The more publicity these proceedings against insulin patients receive, the less likely will magistrates be to treat them with exceptional leniency.

Antivivisection Display Banned

Municipal action has been taken in the city of Bath to restrain the display of antivivisectionist exhibits in a shop window in one of the principal thoroughfares. The British Union for the Abolition of Vivisection showed models representing a dog strapped down on its back and awaiting operation, its mouth held open by a metal gag, and a cat strapped face downwards. Presumably the premises belong to the city corporation. At the instance of the chairman of the Corporate Property Committee the town clerk wrote a letter to the lessee who had sublet the shop to the Union. The chief constable had called at the premises and pointed out that, though there was no legal objection to the exhibits, he would prefer, to avoid ill-feeling, that they be not displayed. Protests, it appears, had been raised by parents on the ground of the effect of the display on sensitive children. Counter-protests, against the interference of the municipal authorities with the Union's propaganda, have also been vigorously made.

PHYSIOLOGICAL SOCIETY AND SOCIETY OF CHEMICAL INDUSTRY

At a joint meeting of the food group of the Society of Chemical Industry and the Physiological Society on Oct. 20th, with Mr. L. H. Lampitt, D.Sc., in the chair, a discussion on

Diet from the Chemical and Physiological Points of View

was opened by Prof. H. E. Armstrong, F.R.S. (City and Guilds College). If we continued to lower our diet, he said, we should ultimately die out. Scientific service, nowadays, might be tainted by industrial commitments. The brewers were embarking on a "drink more beer" campaign, but if beer were worth drinking it would need no advertising. Bread was no longer fit to be the staff of life, milk was not all it should be, and the adage "eggs is eggs" no longer held. If we once learned to feed ourselves properly we should be sure of health. It had been shown that large colonies of rats could be so fed, over long periods of time, that they remained entirely healthy. If rats why not cows? This seemed to him to offer the only chance of getting rid of tuberculosis. Grass, like every other cereal, needed cultivation. If summer grass, properly cultivated, was dried and fed to cows during the winter they would produce summer milk. At Christ's Hospital part of the herd had been set apart and fed on dried summer grass, and one group of young boys had been chosen to receive milk from the part of the herd fed on summer grass, and another group to receive milk obtained from the rest of the herd. It was too early to decide the effect on the boys, but the effect of the summer grass on the cows had been magical.

Mr. A. L. Bacharach (Glaxo Laboratories) said that physiologists sometimes complained that chemists, especially food chemists, were lamentably ignorant of physiology. Yet in the latest edition of "Food and the Principles of Dietetics," by Dr. Robert Hutchison and Prof. Mottram, he had been impressed by the extent and precision of the chemical information and by the large number of physiological problems to which there appeared to be no definite answers at present. The food chemist, preparing an artificial foodstuff, wanted to know what relative proportions of fat, protein, and carbohydrate, what vitamins and minerals, what trace metals were essential to human nutrition; on many matters he asked the physiologist in vain for enlightenment. In 24 pages of Hutchison and Mottram, examined at random, there were no less than eight physiological points upon which the authors found themselves unable to make a definite statement. Dr. G. C. M. M'Gonigle, in a letter published in the *British Medical Journal* of June 29th, had insisted that all nutritional investigations were crippled by the absence of any accepted standards of nutrition or criteria of malnutrition. It was commonplace knowledge that 40 per cent. of the fat taken into the body by the mouth could not be accounted for, and some of the most fundamental facts about fat absorption were the subject of controversy. Since fats carried in their unsaponifiable matter substances of great physiological importance, it was a practical necessity to know whether this unsaponifiable matter was released in the alimentary canal or not. If it was, the constituents might be freely utilised, but if they were not released until fats were withdrawn from storage it was conceivable that the body might store up large amounts of vitamin A, for example, in the fat deposits, and yet be unable to use it owing to some breakdown at the katabolic stage. Prof. Armstrong appeared to believe there was "a sort of a something" in all fresh foods which was absent in all processed ones. But to approve of good cooking did not involve condemnation of good canning, and the best tinned tomatoes were not inferior to the worst untinned ones.

Mr. G. L. Peskett (National Institute for Research in Dairying, Reading) described some experiments on diet and lactation in the rat. Three diets were used, the constituents including whole wheat, linseed cake, casein, butter, calcium carbonate, sodium chloride, carrots, yeast, whole milk dried or raw, and fresh ox-liver. From the first diet yeast, raw milk, and liver were omitted, and failure of lactation occurred in 31 per cent. of the animals, although growth and littering were normal. In the second diet only raw milk and liver were omitted, and again there was a high percentage of failures in lactation. The third diet contained all the constituents with the exception of dried milk, and on this diet lactation occurred normally in about 98 per cent. of cases. It might be that external influences were affecting the results, but the animals lived under controlled conditions; or some disability might be inherent in the rats, but no obvious hereditary factor had been discovered. It seemed likely that some obscure food deficiency was leading to non-lactation in the experimental animals.

Prof. S. J. Cowell (St. Thomas's Hospital) discussed thyroid enlargement in relation to food. One school, he said, stressed the importance of a deficiency of iodine in the diet, and another school the importance of goitre-producing substances present in certain foods. The incidence of goitre could be reduced if the iodine in the diet was increased, but it was difficult to cause the disappearance of established goitre by giving iodine. If the maternal diet during pregnancy and lactation was rich in iodine goitre could only be produced with difficulty in the young. There was also evidence that certain foodstuffs could produce goitre; rabbits fed on a diet of cabbage sometimes developed the condition, and excess of calcium gave rise to it in rats, but in most cases the goitre-producing properties of the diet could be counteracted by giving iodine.

Mr. A. S. Parkes, D.Sc., F.R.S. (National Institute for Medical Research), discussed growth and reproduction in rats fed on a normal diet. The young rat weighed 3–6 g. when born, and if the food-supply was unlimited the rate of growth was amazing. The young mouse normally weighed 7–9 g. when 3 weeks old, but if suckled by a rat might reach a weight of 20 g. at the same age and become so fat as to be immobilised. Pregnancy in the rat lasted 23 days, but if pregnancy occurred while the rat was suckling the previous litter, delivery might not occur for 30 days or more. Œstrus usually followed immediately on parturition, but if the rat was suckling three or more young the next œstrus was delayed for three weeks. This inhibitory effect of lactation was not found if only one or two young were being suckled. Thus, even in the absence of any dietary deficiency, curious things might happen. Degeneration of the testes in the rat, following vitamin-B deficiency, was not histologically specific; a similar degeneration occurred if an animal was starved, or following exposure to X rays. If pregnant female rats were fed on a diet deficient in vitamin E the fœtuses died suddenly at about the middle of gestation and were reabsorbed.

Prof. J. C. **DRUMMOND** (University College, London) wondered whether we had lost the instinct for consuming suitable foods. At Reading, in the early days of study of diet, three groups of pigs were fed on different diets; those given a normal diet spent their time basking in the sun, those short of calcium licked lime off the walls, while those lacking vitamin A rooted out every blade of grass they could find. Rats would make an intelligent choice of food from a variety of dishes, but there were few traces of this instinct in man, unless they were detected among children robbing an orchard, or in the cravings of pregnancy. He had known cases which had developed scurvy, although fruit was available; the individuals happened to dislike fruit. The Masai of Africa were nomads living chiefly on flesh and milk, and were of fine physique; whereas among the Kikuyu the use of green vegetables was taboo to the men of the tribe, and their nutrition was markedly affected; their women, however, ate green vegetables and were better nourished. What was the instinct, he asked, which should lead us to eat a natural diet, and how had it been lost?

Dr. M. W. **GOLDBLATT** (St. Thomas's Hospital), speaking of obesity, said that a stationary weight might be deceptive, the body fat being gradually replaced by water. The obesity of over-eating was a rarity. Among 294 cases seen at St. Thomas's Hospital, 100 were adolescents and children; 35 per cent. of them had been fat since birth, 31 per cent. became fat at the time of the second dentition, and 34 per cent. at puberty. The change was not associated with an alteration in the intake of food. Among 194 adults exogenous obesity due to overeating only occurred in 23 per cent.; they admitted it and were proud of it. In the remainder obesity was endogenous and dated from birth in 29 per cent., from puberty in 33 per cent., and followed childbirth in 38 per cent. Most fat people, then, were fat from obscure causes, associated with the important sex events and endocrine disturbance. It was only in rare cases that definite evidence could be obtained from metabolism experiments that obese subjects were more liable to form fat from sugar than were normal controls. The ordinary methods of respiratory quotient determinations were inadequate to detect the cellular abnormalities which led to marked depositions of fat. Treatment with gland preparations was of little use unless supplemented by careful dietary regulation. In this connexion it was always to be kept in mind that carbohydrate (glycogen) led to great retention of water in the tissues.

Dr. R. D. **LAWRENCE** (diabetic clinic, King's College Hospital) said that in diabetes the storage and burning of carbohydrate foods was principally defective, but the diet might be varied considerably without making any difference to the sugar production or to the amount of insulin necessary. It seemed to be a question of the total caloric intake rather than the balance of constituents in the diet. Possibly all foodstuffs were turned into sugar before burning, or else insulin was concerned with the metabolism of protein and fat, as well as carbohydrate.

Prof. M. S. **PEMBREY**, F.R.S. (Guy's Hospital), said that weight and size were not biological conceptions. Unless there were variations there was no adaptation; logically, there could be no normal. The chemist liked purity, but under natural conditions purity was pathological. The idea of pure milk was nonsense; we wanted bacteria if we were to develop resistance. The food chemists should not aim at purity or imagine that a thing which was synthesised was better than something which was natural; they should think in terms of biology, not of chemistry, for they could not afford to forget that even civilised man possessed the essential physiological characteristics of his remote ancestors. Fatness and thinness were a matter of temperament, but there was little doubt that the conservation of energy held good in each case; apart from the output of energy in the form of muscular activity it was important to remember the variations in the loss of heat by the skin.

Prof. H. A. **HARRIS** (University College Hospital) reminded Prof. Drummond of an experiment carried out in America in which young children were allowed to choose their food from some 18 dishes. It was found that in a general way they showed an instinct for diet—the rachitic child, for example, went for the eggs and butter. He thought obesity was common among those who had risen to comparative affluence from the working-class.

MULTIPLE CRANIAL NERVE PALSIES

THE SEMON LECTURE

FOR the subject of his lecture, delivered at the house of the Royal Society of Medicine on Nov. 2nd, Prof. H. Burger, of Amsterdam, chose "The So-called Associated Paralyses of the Larynx and Pharynx," recalling that his first footsteps in the way of the neurology of the larynx were guided by Sir Felix Semon.

In the first place, Prof. Burger discussed the question whether the vagus or the accessory nerve supplied the motor innervation of the larynx. Willis considered the eleventh cranial nerve, named after him, to be confined to the innervation of the neck and shoulder muscles; later on, but even as early as in Scarpa's time, it was thought to supply the motor nerves of the pharynx and larynx. But for the last 40 years the old opinion has been readopted that the eleventh nerve has nothing to do with the vocal cords, although Semon reported a series of cases of combined paralysis of the cord and neck muscles, while other symptoms of paralysis of the vagus were not apparent. On the other hand it has been shown that a unilateral lesion of the vagus does not affect the heart and respiration, and this is an instance of the kind of difficulty frequently present in these investigations. Thus, it is acknowledged that the sensory supply to the larynx is by the superior laryngeal nerve, but nevertheless sensory affections are seldom found in high lesions of the vagus. The sensory supply of the larynx is very variable; sometimes the glossopharyngeal nerve supplies sensation to the aditus laryngis, and the recurrent nerve also sends sensory branches, while the superior laryngeal nerve may send fibres across the middle line to the opposite side. Again, unilateral paralysis of the cricothyroid muscle, produced by lesions of the superior laryngeal, is difficult to detect, and impossible when recurrent paralysis coexists. Similarly, when the ninth nerve is paralysed, the sense of taste may be affected, but the rôles played by the glossopharyngeal and chorda tympani nerves in the supply of this function vary greatly.

It was, he said, thought in the last century that the motor supply of the palate was from the facial nerve, but Beevor and Horsley showed that it came from the vagus and accessory; combined paralysis of face and palate is very uncommon, but Avellis, out of 150 cases of paralysed cord, found 10 cases of homolateral paralysis of the palate; here again a unilateral paralysis of the palate may easily pass unnoticed, or may recover while the cord is still affected. Combined paralysis of the vocal cord and phrenic nerve is very rare; of this Prof. Burger reported a recent case from his experience. It was formerly believed that paralysis of all four last cranial nerves was necessarily of bulbar origin, but it is improbable that a lesion of such an extensive area as to involve these four nuclei would occur without other bulbar or cerebral symptoms. There may be a combined paralysis of the ninth, tenth, and eleventh nerves in the jugular foramen; and this syndrome must be distinguished from that of Hughlings Jackson where the tenth, eleventh, and twelfth nerves are involved but the ninth escapes. Here a lesion of the nuclei or roots is topographically improbable; the trunks of the tenth and eleventh nerves run in a common dural sheath, which lies close beside the ninth but which is separated from the twelfth by a broad bony wall; outside the cranium they are only divided by a sharp edge of bone, and therefore this syndrome is much more likely to be caused by an affection below the base of the skull.

He next directed attention to the "parapharyngeal space," bounded internally by the constrictor muscles, behind by the transverse processes of the vertebræ, and externally by the ascending ramus of the mandible and the parotid gland; 14 years ago he suggested the injection of this space with novocain as a preliminary to tonsillectomy. In it run the ninth, tenth, and twelfth nerves, and the cervical sympathetic, and injection of it causes temporary paralysis of the soft palate, rarely of the face, occasionally slight symptoms of paralysis of the sympathetic, and affection of the sense of taste; the facial nerve is presumably reached in the parotid gland through a constantly present opening in the parotid fascia; the vagus running through the space does not suffer at all from the injection.

A SIMPLER CLASSIFICATION

We must refrain, Prof. Burger insisted, from putting up a series of syndromes on the basis of accidental combinations of paralyses, even though these syndromes bear the names of distinguished medical men. Few neurologists or laryngologists can tell without consulting their books exactly the difference between the syndromes of Avellis, Hughlings Jackson, Moritz Schmidt, Tapia, Vernet, and Collet; these named syndromes are unpractical and confusing, and a new classification and nomenclature are needed. Neurologists in frequent contact with cases of associated paralyses of cranial nerves do not fetter their minds by trying to fit every combination into a little compartment with a name of its own. Prof. Burger suggested a simpler classification.

1. Syndrome of the bulbar nerves, including the paralyses of the vago-accessory of central and extramedullary origin.
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4. The recurrens-phrenicus syndrome, the rare combined paralysis of cord and diaphragm.

SEMON'S LAW

The concluding part of the lecture was devoted to a discussion of Semon's law. This, in Prof. Burger's view, is not actually a law, but an hypothesis, an attempt to explain the surprising fact that a lesion of the recurrent laryngeal nerve can reveal itself in two ways, either with the vocal cord in the median position with retention of its tone-giving function, or with arrest in the "cadaveric position." Semon taught that the former indicates paralysis limited to the abductor or posticus muscle. Krause maintained that this median position was due not to paralysis but to stimulation, but this is negatived by the associated paralyses; how can there be spastic contraction only of the posticus with paralysis of all the other muscles involved? Grossman's theory that the median position is an expression of complete paralysis is more difficult to dismiss. There is, however, an increasing doubt of the truth of Semon's law. In syringobulbia and in multiple sclerosis, paralysis of the cord frequently assumes atypical forms. Other objections are that no one has ever succeeded in producing a posticus paralysis experimentally in animals, and that in an existing posticus paralysis destruction of the recurrent laryngeal nerve causes no change in the position of the cord; on the contrary the expected outward movement does not occur. He mentioned the theory that the cord assumes the median position in lesions of the recurrent nerve, and the cadaveric position when the superior laryngeal nerve is also involved.

ROYAL FREE HOSPITAL

NEW PATHOLOGY DEPARTMENT

THE pathology department at the Royal Free Hospital has long been uncomfortably overcrowded, and the decision to allocate the basement floor of the Eastman Dental Clinic, adjoining the hospital in the Gray's Inn-road, to pathology will afford welcome relief. The expansion occurs opportunely at a time when a new plan of teaching pathology is being inaugurated, and indeed was essential for the development of this scheme. Whereas formerly instruction to junior students in patholog
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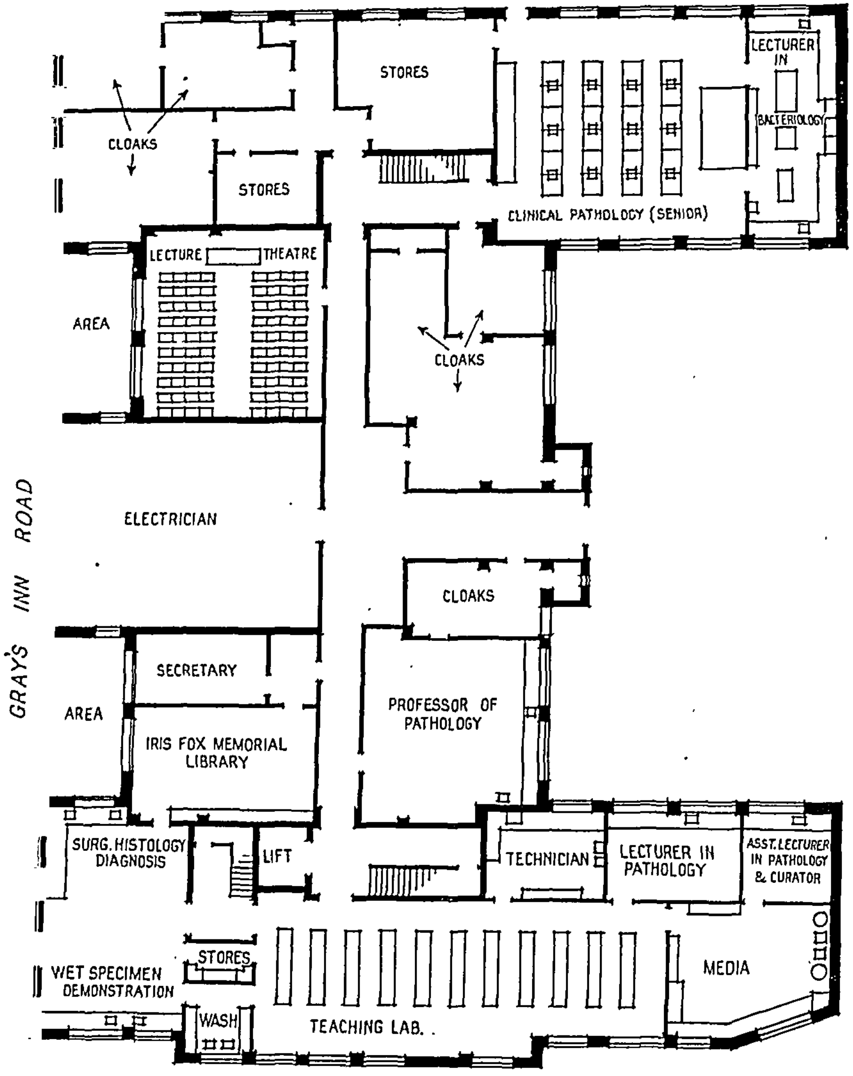
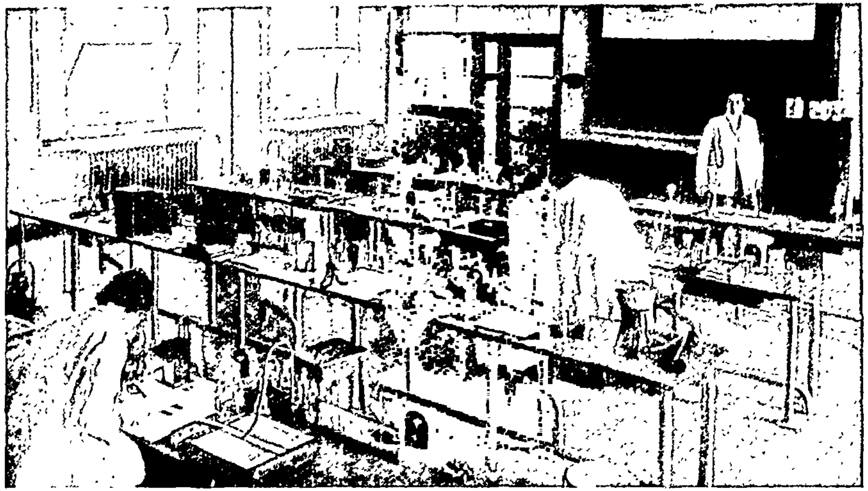
ACCOMMODATION FOR PATHOLOGY AND BACTERIOLOGY, ROYAL FREE HOSPITAL



Plan of basement, Eastman Dental Clinic.



Laboratory for clinical pathology.

Teaching laboratory.

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THE FACT OF DEATH

To the Editor of THE LANCET

SIR,—A few comments on your well-informed leading article of Oct. 28th may be of value. The Act of 1926 was not in its earlier stages a Government measure, but a private member's Bill promoted by the Federation of Medical and Allied Services, although prepared in consultation with the official authorities and with their assistance. While the new Act did not, it is true, contain any provision as to examination of bodies after death, the Bill as introduced did include such provision. The circumstances are instructive and it may be worth while to recall them.

The original programme of the Federation had included the requirement that in no circumstances should death registration or burial take place before the body had been medically inspected. It became clear, however, during the debate that this universal 100 per cent. provision, if pressed, would be defeated by the standing objections to it. These included not only that of an expensive provision against "a very small chance indeed" but also the severely practical objection that in certain parts of the country the plan was unworkable, in certain cases unnecessary, and would lead either to bodies lying unburied or to attendance upon the sick being neglected for attendance upon the dead. As a compromise the Federation accepted with some reluctance an alternative which was felt to supply the substance of what had been contended for while avoiding its previous pitfalls. This proposal would empower the county, county borough, city, and metropolitan borough councils to make arrangements for the medical verification of the fact of death in their respective areas under conditions as elastic as would be essential for practical working purposes. The clause to this effect (Clause 7) was accordingly included in the Bill and commented upon favourably on second reading in the House of Commons as a fortunate solution of a long-standing deadlock.

Clause 7 ran as follows :—

> 7. (1) *Power to provide for medical inspection of body.*—It shall be lawful for a county council or a county borough council, or in London, for the common council of the City of London or for a metropolitan borough council, with the approval of the Minister of Health, to make such arrangements as they may think fit whereby, in any case where the body of a deceased person has not been seen by a registered medical practitioner since the death, the services of a registered medical practitioner are made available for the purpose of verifying, upon the request and authorisation of a coroner, the death of any deceased person dying within such coroner's jurisdiction; and where such arrangements are made, regulations of the Registrar-General may provide for notification for the purposes thereof being given by the registrar to the coroner in such cases and subject to such conditions as may be prescribed.
>
> (2) The expenses incurred by any local authority under this section may be defrayed in the case of a county council out of the county rate and in any other case as part of the expenses of the authority in the execution of the Public Health Acts, 1875 to 1925, or of the Public Health (London) Act, 1891, as the case may be.

In Grand Committee, however, the clause was opposed from both flanks, firstly by the idealists who, preferring the shadow to the substance, still sought in spite of every warning to substitute the original universal requirement; secondly, by others who thought it possible to work out during the remaining stages of the Bill some further alternative which might improve upon Clause 7 without going so far as a universal requirement. In fact no such alternative was discoverable; the clause was lost and an attempt on my part to reinstate Clause 7 at the report stage was frustrated by the fact that it would have involved the recommittal of the Bill, and, in view of the dearth of Parliamentary time, risked the total loss of its valuable remaining provisions.

If in view of the Bootle case, for instance, public opinion demands action in the matter, I am still as convinced as I was then that it would necessarily have to follow the lines of Clause 7; and the foregoing narrative may not be without its moral as to the consequences of allowing the best to be the enemy of the good, even to the extent of a desire to retain a grievance in preference to securing its removal. I am, Sir, yours faithfully,

FRANCIS FREMANTLE.

Hatfield, Herts, Nov. 2nd, 1933.

TUBERCULIN TESTS

To the Editor of THE LANCET

SIR,—In your account of a discussion on early diagnosis of pulmonary tuberculosis at the Royal Society of Medicine (Oct. 28th, p. 973), Dr. Peter Kerley, speaking of opacities in chest radiograms, is reported to have said "an intradermal tuberculin test gave a sharp focal reaction in the lungs, and the opacity cleared up in a few days; this distinguished the tuberculous type." The usual technique in carrying out this test consists of the intradermal injection of 0·1 c.cm. of 1 in 1000 old tuberculin. If properly carried out, it is most unlikely to produce any reaction other than the local reaction, and if a constitutional or focal reaction occurs it is probable that some of the tuberculin has been injected subcutaneously.

Personally I sometimes inject tuberculin subcutaneously both for diagnosis and treatment; and if used with proper regard to correct dosage I think the dangers are negligible. Many members of the profession, however, appear to regard anything in the nature of a constitutional reaction from tuberculin as likely to be attended with such dire results that it would seem desirable to have it clearly understood that the Mantoux test is free from this risk.

I am, Sir, yours faithfully,

T. W. PRESTON.

Queen Anne-street, W., Oct. 28th, 1933.

*** Dr. Kerley tells us that the actual sentence in his paper read as follows: "If a Pirquet test is made, *and there is a constitutional reaction*, serial radiograms show that a typical epituberculous infiltration develops around the thickened hilum. This epituberculous infiltration disappears very rapidly in the course of a week or ten days." The italicised part of the above sentence is of importance.—ED. L.

PERONEAL MUSCULAR ATROPHY

To the Editor of THE LANCET

SIR,—May I comment on several features of the interesting family recorded by Dr. Ian Gordon in your issue of Nov. 4th (p. 1042). In the first place I should like to question the diagnosis of peroneal muscular atrophy (Charcot-Marie-Tooth) for the following reasons. The age of onset in both the cases described was rather late, whereas this condition usually appears in childhood; and the knee-jerks in Case 2 were absent, whereas they are said never to disappear in Charcot-Marie-Tooth's disease. Secondly, I do not think there is justification for saying that "only affected females transmit the disease" in this family; it is quite clear that the abnormality, whatever its nature, is being transmitted as a simple Mendelian dominant, and the fact that

CORRESPONDENCE

CHRISTINE MURRELL MEMORIAL

To the Editor of THE LANCET

SIR,—Many friends and associates of the late Dr. Christine Murrell will wish to give expression to their affection and gratitude in a way that will perpetuate her memory and at the same time help to carry forward the work of which she was so enthusiastic a pioneer. The St. Marylebone Health Society are shortly going to build a new infant welfare centre and day nursery on the site of the centre where Dr. Murrell started an infant consultation in 1907, worked for 18 years and then became honorary consulting physician. This land has been presented by Capt. the Hon. Gerald B. Portman. It is felt that the memorial to Dr. Murrell could take no better form than a contribution to the permanent equipment of part of this building, with which it is hoped to associate her name.

Contributions will be gratefully received by Mrs. Russell Brain, 31, St. John's Wood Park, London, N.W.8. Cheques should be made out to "Christine Murrell Memorial Fund," and crossed Westminster Bank.—We are, Sir, yours faithfully,

E. HONOR BONE,
R. LANGDON-DOWN,
MARIE LAWSON,
MABEL L. RAMSAY,
ERIC PRITCHARD,
CHARLES PORTER,
SOPHIA SEEKINGS FRIEL,
GRACE BUCKLEY,
MARY MOSTYN BIRD,
STELLA BRAIN.

Nov. 6th, 1933.

CARBOHYDRATE METABOLISM IN HYPERTHYROIDISM

To the Editor of THE LANCET

SIR,—Dr. Norman Kletz in your last issue (p. 1024) discusses the disturbance of carbohydrate metabolism in hyperthyroidism. He mentions that thyroid feeding empties the liver of glycogen but does not mention the fact, perhaps of greater clinical importance, that the heart glycogen is also depleted. This was clearly established by Dr. McCance and myself in 1931 (Biochem. Jour., xxv., 570). In view of disordered heart action in hyperthyroidism our finding is at least of interest, and as it has not been noticed in subsequent clinical or other publications we beg to draw attention to it in your journal. Thyroid feeding in animals causes complete depletion of heart glycogen—as early, if not before, liver glycogen. We have had no opportunity of estimating the heart glycogen in human hyperthyroidism (post-operative deaths in thyroid crises are rare now), but it is a point of investigation which is of great interest, and might be remembered in unfortunate cases. It may be that the cardiac disturbances in Graves's disease are essentially due to a lack of heart glycogen.

I am, Sir, yours faithfully,

R. D. LAWRENCE.

Biochemical Department, King's College Hospital,
Nov. 6th, 1933.

To the Editor of THE LANCET

SIR,—I was interested in Dr. Kletz's article in which he gives his experience of the treatment of thyrotoxicosis by the high carbohydrate diet which I have advocated. During the last five years I have continued to use the high carbohydrate diet as part of the therapeutic programme in all cases of hyperthyroidism, and have uniformly obtained good results. The cases have not been treated by diet alone, but the impression gathered has been that patients suffering from hyperthyroidism invariably have done better when the high carbohydrate diet was included in the treatment. The benefit of giving carbohydrates freely and of reducing the proteins and fats (the diet averaged P 80, F 60, C 300–400) was twofold, and was shown both in the diminution of dyspeptic symptoms, so common in this disease, and in the lessening of the signs and symptoms of thyrotoxicosis.

In his paper Dr. Kletz remarked that when glycosuria or hyperglycæmia is found the case should be fully reviewed, and any carbohydrate bias in the diet should be supported by adequate dosage of insulin. Glycosuria accompanying thyrotoxicosis, however, is not always a contra-indication to the use of a high carbohydrate diet, and insulin is often unnecessary. In my article (Brit. Med. Jour., 1928, ii., 251) I mentioned a case of hyperthyroidism exhibiting a mild type of diabetes (confirmed by a glucose-tolerance test), in which the urine rapidly became sugar-free when the patient was given a high carbohydrate diet. At the time of writing the paper (1928) practically no experience of high carbohydrate diets in diabetes was as yet available, and I therefore considered the response of thyroid glycosuria to carbohydrates to be somewhat paradoxical, but I suggested that the glycosuria might be explained by a defective liver function dependent upon the thyrotoxicosis. In a recent discussion on high-carbohydrate low-fat diet in diabetes at the Royal Society of Medicine (Proc. Roy. Soc. Med., 1933, xxvi., 1607) the view was put forward that the increased sugar tolerance shown on starchy diets was due to increased functional activity of the liver. Experimental work in animals has certainly shown that prolonged thyroid feeding depletes the glycogen reserves in the liver (Cramer, Burns, and Marks).

There is therefore some reason to suppose that the disappearance of certain types of glycosuria in hyperthyroidism resulting from carbohydrate feeding is due to an increased functional activity of the liver, and this would lend support to the view that carbohydrates have a similar beneficial effect upon thyrotoxicosis in general.—I am, Sir, yours faithfully,

Leeds, Nov. 6th, 1933. H. H. MOLL.

PROTECTION FROM X RAYS AND RADIUM

To the Editor of THE LANCET

SIR,—We would like to assure your readers that the discrepancy in detail between Recommendation 3 and the Appendix to our Report in your last issue, and to which you drew attention, is more apparent than real. It has long been the custom to do blood counts in the morning period in order to be rid of the rise in the afternoon blood figures, which was thought to be due to the customary midday meal.

The Appendix, however, draws attention to recent work on the blood, from which it appears that this rise in blood count is not due to feeding, but is rather one phase of a very complicated process operating throughout the cycle of 24 hours. This recent addition to our knowledge was included as an Appendix to the Report, for it was thought that those in charge of departments where blood counts are undertaken were better served by having an alternative procedure put before them.

We are, Sir, yours faithfully,

STANLEY MELVILLE,
SIDNEY RUSS,
Hon. Secs., X Ray and Radium Protection Committee.

Nov. 6th, 1933.

THE FACT OF DEATH

To the Editor of THE LANCET

SIR,—A few comments on your well-informed leading article of Oct. 28th may be of value. The Act of 1926 was not in its earlier stages a Government measure, but a private member's Bill promoted by the Federation of Medical and Allied Services, although prepared in consultation with the official authorities and with their assistance. While the new Act did not, it is true, contain any provision as to examination of bodies after death, the Bill as introduced did include such provision. The circumstances are instructive and it may be worth while to recall them.

The original programme of the Federation had included the requirement that in no circumstances should death registration or burial take place before the body had been medically inspected. It became clear, however, during the debate that this universal 100 per cent. provision, if pressed, would be defeated by the standing objections to it. These included not only that of an expensive provision against "a very small chance indeed" but also the severely practical objection that in certain parts of the country the plan was unworkable, in certain cases unnecessary, and would lead either to bodies lying unburied or to attendance upon the sick being neglected for attendance upon the dead. As a compromise the Federation accepted with some reluctance an alternative which was felt to supply the substance of what had been contended for while avoiding its previous pitfalls. This proposal would empower the county, county borough, city, and metropolitan borough councils to make arrangements for the medical verification of the fact of death in their respective areas under conditions as elastic as would be essential for practical working purposes. The clause to this effect (Clause 7) was accordingly included in the Bill and commented upon favourably on second reading in the House of Commons as a fortunate solution of a long-standing deadlock.

Clause 7 ran as follows :—

7. (1) *Power to provide for medical inspection of body.*—It shall be lawful for a county council or a county borough council, or in London, for the common council of the City of London or for a metropolitan borough council, with the approval of the Minister of Health, to make such arrangements as they may think fit whereby, in any case where the body of a deceased person has not been seen by a registered medical practitioner since the death, the services of a registered medical practitioner are made available for the purpose of verifying, upon the request and authorisation of a coroner, the death of any deceased person dying within such coroner's jurisdiction; and where such arrangements are made, regulations of the Registrar-General may provide for notification for the purposes thereof being given by the registrar to the coroner in such cases and subject to such conditions as may be prescribed.

(2) The expenses incurred by any local authority under this section may be defrayed in the case of a county council out of the county rate and in any other case as part of the expenses of the authority in the execution of the Public Health Acts, 1875 to 1925, or of the Public Health (London) Act, 1891, as the case may be.

In Grand Committee, however, the clause was opposed from both flanks. firstly by the idealists who, preferring the shadow to the substance, still sought in spite of every warning to substitute the original universal requirement; secondly, by others who thought it possible to work out during the remaining stages of the Bill some further alternative which might improve upon Clause 7 without going so far as a universal requirement. In fact no such alternative was discoverable; the clause was lost and an attempt on my part to reinstate Clause 7 at the report stage was frustrated by the fact that it would have involved the recommittal of the Bill, and, in view of the dearth of Parliamentary time, risked the total loss of its valuable remaining provisions.

If in view of the Bootle case, for instance, public opinion demands action in the matter, I am still as convinced as I was then that it would necessarily have to follow the lines of Clause 7; and the foregoing narrative may not be without its moral as to the consequences of allowing the best to be the enemy of the good, even to the extent of a desire to retain a grievance in preference to securing its removal.   I am, Sir, yours faithfully,

FRANCIS FREMANTLE.

Hatfield, Herts, Nov. 2nd, 1933.

TUBERCULIN TESTS

To the Editor of THE LANCET

SIR,—In your account of a discussion on early diagnosis of pulmonary tuberculosis at the Royal Society of Medicine (Oct. 28th, p. 973). Dr. Peter Kerley, speaking of opacities in chest radiograms, is reported to have said "an intradermal tuberculin test gave a sharp focal reaction in the lungs, and the opacity cleared up in a few days; this distinguished the tuberculous type." The usual technique in carrying out this test consists of the intradermal injection of 0·1 c.cm. of 1 in 1000 old tuberculin. If properly carried out, it is most unlikely to produce any reaction other than the local reaction, and if a constitutional or focal reaction occurs it is probable that some of the tuberculin has been injected subcutaneously.

Personally I sometimes inject tuberculin subcutaneously both for diagnosis and treatment; and if used with proper regard to correct dosage I think the dangers are negligible. Many members of the profession, however, appear to regard anything in the nature of a constitutional reaction from tuberculin as likely to be attended with such dire results that it would seem desirable to have it clearly understood that the Mantoux test is free from this risk.

I am, Sir, yours faithfully,

T. W. PRESTON.

Queen Anne-street, W., Oct. 28th, 1933.

*** Dr. Kerley tells us that the actual sentence in his paper read as follows: "If a Pirquet test is made, *and there is a constitutional reaction*, serial radiograms show that a typical epituberculous infiltration develops around the thickened hilum. This epituberculous infiltration disappears very rapidly in the course of a week or ten days." The italicised part of the above sentence is of importance.—ED. L.

PERONEAL MUSCULAR ATROPHY

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SIR,—May I comment on several features of the interesting family recorded by Dr. Ian Gordon in your issue of Nov. 4th (p. 1042). In the first place I should like to question the diagnosis of peroneal muscular atrophy (Charcot-Marie-Tooth) for the following reasons. The age of onset in both the cases described was rather late, whereas this condition usually appears in childhood; and the knee-jerks in Case 2 were absent, whereas they are said never to disappear in Charcot-Marie-Tooth's disease. Secondly, I do not think there is justification for saying that "only affected females transmit the disease" in this family; it is quite clear that the abnormality, whatever its nature, is being transmitted as a simple Mendelian dominant, and the fact that only females appear to have transmitted the disease may be due to incomplete examination of so-called normals, to pure chance, or to the rather late onset of symptoms, which would mean that some young "normals" are going to develop symptoms at a later date. This is important from the point of view of prevention, as all affected persons will tend to transmit the abnormality to half their offspring on the average.

I suggest that the condition is really hypertrophic neuritis. This disease, which is not uncommon, is transmitted as a simple Mendelian dominant; the clinical manifestations are variable but muscular wasting, claw-foot, and loss of tendon-jerks are the most frequent. The pathognomonic sign is enlargement of the peripheral nerves, but this is not always easy to demonstrate. I have performed biopsies on several cases in whom the nerves could not be felt to be unduly enlarged and have found the typical histological picture of hypertrophic neuritis (Dejerine-Sottas); even though the nerves are not apparently enlarged on palpation they are obviously thickened when exposed at operation.

I am, Sir, yours faithfully,

HUGH G. GARLAND.

Leeds, Nov. 6th, 1933.

VETERINARY RESEARCH

To the Editor of THE LANCET

SIR,—In your review of the veterinary research report for Southern Rhodesia (THE LANCET, Oct. 14th, p. 877) a sentence reading "According to workers at the laboratories of the Imperial Bureau of Animal Industry at Weybridge . . ." gives the impression that the Imperial Bureau of Animal Health (*not* Industry) is a research organisation. The position is that the Imperial Bureau of Animal Health is an organisation which deals only with the purely literary side of veterinary research; it is lent accommodation with the veterinary laboratory of the Ministry of Agriculture, Weybridge, but is not a Government department, although the director of the laboratory (Mr. W. Horner Andrews, D.Sc.) is director of the bureau. Actually, the foot-and-mouth disease research work is carried out at the Pirbright laboratory, which is a branch laboratory also under the control of Dr. Andrews.—I am, Sir, yours faithfully,

Weybridge, Surrey, Nov. 4th, 1933. W. A. POOL.

NASAL INFECTION IN THE PSYCHOSES

To the Editor of THE LANCET

SIR,—While agreeing that it is the duty of the psychiatrist, as of any other physician, to remove any discoverable septic foci from his patient, I should like to protest against the light-hearted way in which some psychiatrists seem to embark on the most mutilating and drastic operations. I have seen in the past, although less recently, psychotic patients who have been submitted to almost every surgical practice imaginable. A year ago I saw an involutional melancholic with hypochrondrical delusions, who had started with an appendicectomy followed by a hysterectomy, a double amputation of the breast, and complete removal of the teeth. In spite of all this she finally drifted into a mental hospital. There exists a vast number of manic-depressives in a depressed phase, involutional melancholics, and hypochrondrical schizophrenics as well as neurotics, who welcome almost any operation—which, however, usually leaves them considerably worse off.

Surely operative procedure of such a drastic kind should be reserved for psychoses of the organic reactive type and not for the functional types. Any psychiatrist worthy of the name should be capable of diagnosing the difference. It is, moreover, difficult to see how sepsis can cause such an exquisitely elaborated psychosis as paranoia or possible *folie à deux*. Even such a "disorderly" psychosis as schizophrenia shows psychological elaboration when properly examined, and the recovery or relapse is frequently correlated to psychological, not organic, factors.

To mutilate patients with functional psychoses is to disregard all the psychological discoveries of the last 40 years. It is only fair when Cotton's work is mentioned to state that this was shown to be unreliable by the careful researches of Kopeloff and Kirby.

I am, Sir, yours faithfully,

CLIFFORD ALLEN, M.D., D.P.M.

Dartford, Kent, Nov. 5th, 1933.

PROBLEMS OF ASTHMA

To the Editor of THE LANCET

SIR,—In the report of the discussion on asthma upon which Mr. Frank Coke comments in to-day's issue the reader will find the words "An attempt towards this harmony [i.e., between the biochemical and the psychological aspect of asthma] was Dr. Culpin's theory that an original emotional stimulus evoked a reflex response by which a number of physiological reactions became abnormally labile." As a hypothetical example there follows "Feather sensitiveness might in some cases be due to the juvenile association of the smell of feathers with the witnessing of sexual intercourse between the parents." Mr. Coke's opinion that "there are better ways of treating patients sensitive to feathers than by giving them explanations which seem to some of us so far-fetched" cannot be contradicted but is grotesquely irrelevant. The allusion to "the psycho-analyst with all his special training in sexual matters" marks a return to a method of attack that I had thought was obsolete.—I am, Sir, yours faithfully,

London, W., Nov. 4th, 1933. MILLAIS CULPIN.

LETTSOM

To the Editor of THE LANCET

SIR,—Whilst deeply grateful for the annotation in your issue of Nov. 4th on my recently published life of Lettsom, I regret to find that though praising the lightness of the literary fare you inveigh against the heaviness of the paper on which it is printed. The fault, if fault there be, is mine, since art paper was chosen with deliberate intent for what appeared to me to be adequate reasons. The first was that in this way the text and the illustrations could be interwoven harmoniously—always an advantage to the reader. The second, and more important, was that the book might last. Most books to-day are printed on wood-pulp paper, and librarians are already becoming alarmed at the way in which the pages of such books are beginning to disintegrate. I am told that the probable life of a great number of books so produced to-day is not likely to be more than 50 years.

Now, Eliza Lettsom's copy of Pettigrew's life of her father, which is in my possession, is as fresh as when it was published in 1817, because it was printed on hand-made paper. No one between 1817 and 1933 has tried to rewrite Lettsom's life, and it was only the fortunate discovery of the Fothergill and Elliot MSS. that made me think of doing so. These sources are now exhausted, and it is unlikely that anyone will attempt another life for another hundred years. I felt that I should like mine to last as long as Pettigrew's, and it was for that reason I decided against ordinary paper. I am, Sir, yours faithfully,

J. JOHNSTON ABRAHAM.

Queen Anne-street, W., Nov. 4th, 1933.

PROBLEMS OF MYOPIA

To the Editor of THE LANCET

SIR,—In an annotation published last week under the above heading you do me too much honour in saying that I have pointed out that frequency distributions as found in nature are seldom symmetrical. This has been known for many years. All that I did was to dispose of Steiger's assertion that refractive errors are distributed symmetrically by taking his own data, and, having fitted a curve thereto, I was able to give the degree of skewness which characterised it; and which, I may add, was far from negligible. Apparently all eyes when lined up at the starting-point (birth) are bunched together, most of them being on the plus four mark. As the race of life proceeds they become spread out, there being a drift in the myopic direction which, according to the findings of Betsch and others, stops short on the whole at emmetropia. Apparently as growth proceeds the varying factors concerned in determining refraction are correlated in such ways that they cancel out, leaving a resultant emmetropia—a happy fact for the race. I am, Sir, yours faithfully,

Lewes, Nov. 6th, 1933. W. R. DUNSTAN.

OIL BEFORE SUNBATHING

To the Editor of THE LANCET

SIR,—"J. C. B." asks for information about the application of oil before exposing the skin to the sun's rays. Whilst in the subtropics, a few years ago, I tried the experiment of applying olive oil to half the body, leaving the other side unanointed. The result of a somewhat excessive exposure was blistering of the shoulder on the oiled side and a severe erythema without blistering on the unoiled parts. I have seen numerous cases of severe sunburn following undue reliance on the protective qualities of various oils.

Experience of sunbathing in many parts of the world has taught me that pigmentation is the only safe protective against the sun's rays. The skin of civilised man, owing to continual covering, has lost its normal protective function to a very large extent. This function can be regained and great benefit may be derived from sunbathing if caution is exercised until pigmentation has occurred. A safe rule is for the first exposure not to exceed 15 to 30 minutes, according to the person's colouring, very fair people being more sensitive than dark ones. If a marked erythema occurs, a second exposure should be avoided until this has subsided. Subsequent doses may be increased by 15 minutes a day until pigmentation sets in, when much larger exposures will be supported with considerable benefit. Over-exposure, apart from being very painful, is often followed by pyrexia, malaise, headache, nausea and vomiting. The victim usually blames the sun for his own indiscretion.

I am, Sir, yours faithfully,

Park-crescent, W., Nov. 7th, 1933. CLEMENT NICORY.

INSTITUTE OF MEDICAL PSYCHOLOGY

To the Editor of THE LANCET

SIR,—May I correct one point which appears, perhaps as a printing error, in your report on Dr. Gillespie's speech on the Children's Act, on page 1049 of your issue of Nov. 4th? The Institute of Medical Psychology has in fact no whole-time medical officer nor any salaried doctors. Excluding the post-graduate students, it has some fifty doctors working as members of the full staff or as clinical assistants and they are all of them of necessity part-time. The difficulty of providing more treatment for cases from the courts in addition to the consultation services which the Institute already arranges is entirely a financial one. The waiting-list of ordinary non-delinquent patients is long and difficult to work through. I am, Sir, yours faithfully,

J. R. REES,
Deputy Director, The Institute of Medical Psychology.

Torrington-place, W.C., Nov. 7th, 1933.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICES

Jack, D. B., to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS

Col. N. J. C. Rutherford, late R.A.M.C., retd., relinquishes his appointment as Med. Offr., The Tower of London, and is succeeded by Lt.-Col. E. T. Potts, R.A.M.C., retd.

Maj. J. A. Manifold to be Lt.-Col.

Capt. R. J. Rosie is secd. for serv. with the Egyptian Army.

TERRITORIAL ARMY

Lt. H. C. M. Williams to be Capt.

H. R. Cara (late Cadet, Liverpool Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

INDIAN MEDICAL SERVICE

Capt. C. R. Henderson to be Maj.

Capt. J. M. Wilder to be Maj. (prov.).

ROYAL AIR FORCE

Flight Lt. J. D. Driberg relinquishes his commission on completion of service.

COLONIAL MEDICAL SERVICES

Dr. R. P. Crawford has been promoted to Senior Medical Officer, Nigeria, and Dr. P. S. Selwyn Clarke, Deputy Director of the Health Service, Gold Coast.

DEATHS IN THE SERVICES

Col. George Arthur Theodore Bray, D.S.O., R.A.M.C. (retd.), who died on Oct. 30th, aged 69, entered the medical service of the army with the rank of Surgeon in 1890, two years after taking the conjoint diplomas of the Royal Colleges. He served with the Nile Expedition of 1898, and was present at the battle of Khartoum (mentioned in despatches and medal). In the South African war of 1899–1902 he took part in the operations in the Orange River Colony and in Cape Colony (Queen's medal with two clasps and King's medal with two clasps). In the late war he served both in France and in Palestine, where he was Assistant Director of Medical Services, and was present at Jaffa and the capture of Jerusalem (mentioned in Despatches and D.S.O.). Col. Bray married in 1905 Angela Mary, daughter of Dr. Thomas Lafian, of Cashel, Ireland, who survives him with one son and two daughters. He reached the rank of Major in 1902, and of Lt.-Col. in 1912. He retired in 1919.

MENTAL HEALTH CONFERENCE.—The third biennial conference on mental health which has been arranged by the National Council for Mental Hygiene will take place from Nov. 22nd–24th at the Caxton Hall, Westminster, S.W. The special session for medical magistrates, to be held on Nov. 25th, at 10.30 A.M., will be open to all medical men and women on presentation of a visiting card. The secretary of the council may be addressed at 78, Chandos House, Palmer-street, London, S.W. 1.

OBITUARY

SIR GEORGE MAKINS, G.C.M.G., C.B.

LATE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

THE death occurred on Thursday, Nov. 2nd, of Sir George Makins, the eminent surgeon, whose place in the deep regard of the medical profession cannot be over-estimated.

George Henry Makins was born at Harrington Cottage, Surbiton Hill (a house that still stands), on Nov. 3rd, 1853, and died on Nov. 2nd, 1933, at 33, Wilton-place, within a few hours of his eightieth birthday. His grandfather was a junior official at the Treasury and died young from phthisis. His father, George Hogarth Makins, received a medical education at King's College and at St. George's Hospital, but devoted himself to the study of chemistry and more especially to metallurgy. He became an authority on the assay of gold, in connexion with the opening up of the new goldfields in Australia.

SIR GEORGE MAKINS

[Photograph by Russell

Makins, a delicate child, was first educated at small private schools, and then at the King's School, Gloucester, until the age of 15. He then studied for a year in his father's private laboratory, and at his own wish decided on a medical career in the face of some parental opposition. In 1871 he entered St. Thomas's Hospital, partly because of its convenience of access from Walton-on-Thames, where the Makins family were residing, and partly because he was attracted by the splendid appearance of the new hospital then only recently opened. He qualified as M.R.C.S., L.S.A. in 1875, and L.R.C.P. in the following year, and held the appointments of house physician and house surgeon in consecutive years. In 1878 he took the diploma of F.R.C.S., and thereafter pursued post-graduate studies in Vienna and Halle until his appointment as resident surgeon at St. Thomas's. This post he held for three years, when he became surgical registrar, and in 1886 was elected assistant surgeon and demonstrator of anatomy in the medical school. He was already well known to many leaders of the profession at home and abroad, for he had acted as assistant to Sir William MacCormac, who was secretary-general of the famous International Medical Congress which assembled in London in 1882. Makins's sojourn on the continent had been suggested to him by Sir William MacCormac as likely to be valuable to him in view of the coming meeting. And so it proved, for it was generally allowed that the great success of the Congress from the organising and secretarial aspect was largely due to Makins's unremitting labours and pleasing personality. His interest in these international movements never abated, and at the International Congress of Medicine held in London in 1913 he played an important part in the organisation of the meeting, while throughout his life he maintained friendly relations with many surgeons of other countries. Thus Makins came on to the staff of St. Thomas's with the perfect background. He had held all the preliminary appointments in succession and with general approval, and he soon justified the promotion. His colleagues found in him a wise consultant, and he became well known as a reliable operator, thorough in his work, who never sacrificed skill to speed. He continued while assistant surgeon to act as lecturer in anatomy, while through his general knowledge of the affairs of the hospital and the needs of the students he was able to suggest to the authorities on many occasions valuable innovations in the working. He became an admirable dean of the school.

Makins's long and intimate association with military medicine began at the outbreak of the South African war, when he went out to the seat of hostilities with Sir William MacCormac, who was appointed "Government consulting surgeon with the field force," and whom he assisted, with the rank of consulting surgeon, both at the front and in the inspection of the hospitals in Natal and Cape Colony. Valuable notes of their work were contributed to THE LANCET in a series of articles, while Makins summarised his own experiences in a volume which was mainly a study of the nature and effects of injuries produced by bullets of small calibre. The general trend of his observations showed that the increased range of fire of the weapons of the time, while it augmented the number of wounded, caused the individual results to be far less fatal than in previous wars, for so relatively large a proportion of the injuries was localised to individual structures, while a hopeful view of trunk and visceral injuries could be taken. For his services in the South African war he was appointed C.B.

Throughout his life Makins did much work outside his special duties as a surgeon to a great hospital. Not only did he teach anatomy, first as a demonstrator and then as lecturer in the medical school, but he also was early engaged in research in experimental pathology in association with C. S. Roy and Klein at the Brown Institution. This, it must be remembered, was at a time when experimental research work was only pursued with difficulty if not with active opposition, and Makins's association with research was one of many illustrations of the wide range of his outlook. It was this width of sympathy that made his so prominent a voice on the Council of the British Red Cross, on the governing body of the Imperial Cancer Research Fund, and on the distribution committee of the Metropolitan Hospital Sunday Fund. At this last he rendered valuable service to the maintenance of the voluntary principle in the management of the hospitals of this country, a principle that was very near his heart, and one to which he gave unwavering support, especially in these later years when other methods of hospital management and maintenance have come to the fore. The development of post-graduate teaching in London was also a matter to which he gave much time and thought, while he was closely interested in furthering the interests of the nursing profession, both in connexion with the Nightingale School and as a civilian member of Queen Alexandra's Imperial Nursing Board. This summary shows the extent and variety of the services he rendered right up to the end of his life for the relief of human suffering both in peace and in war; it shows the manner in which he acted as a most valuable link between the civil medical profession on the one hand and the medical men serving in the naval and army medical services on the other.

The outbreak of the European war found him one of the busiest surgeons in London, but from the earliest hour he gave up all to the national claims. Throughout the struggle he was consulting surgeon to the British Expeditionary Force, when his past experience in South Africa, his range of professional accomplishments, and his powers of organisation were throughout different spheres recognised on all hands. As a consultant in the field, his advice and experience as a military surgeon were highly valued by all medical officers, and notwithstanding the great pressure of the duties in France he was able to carry to a successful conclusion a remarkable piece of research work on the wounds of blood-vessels, published as a separate work, and forming a very complete and valuable monograph on the subject. Further, he organised a very complete investigation at Etaples on the value of the treatment of gunshot wounds by the Carrel-Dakin method. This prolonged and thorough investigation well illustrates his profound interest in the progress of surgery and his capacity for furthering it. He was as well known in the Army Medical Service as in civil life, and not only to the wounded who had benefited by his advice and skill, but also to the higher authorities of the Army, who not infrequently consulted him on matters affecting the Service as a whole; and moreover he examined for years the candidates for commissions in the A.M.S. and in the Naval Medical Service. In 1915 he was appointed K.C.M.G. In 1917–18 he proceeded to India, at the request of the Government, as chairman of a committee appointed to investigate and report on the condition and equipment of military hospitals in India. This was a most extensive inquiry, involving a very large amount of work and much travelling over a great part of India, and resulted in a valuable report for which he received a personal letter of thanks from the viceroy and was awarded the G.C.M.G.

At the Royal College of Surgeons he was an examiner, member of council, and an exceptionally capable president, who not only, by his urbanity and dignity, did much to maintain the prestige of the College, but in addition assisted to develop the Royal College's great museum by the part he took in forming the now well-known "war collection," illustrating the morbid anatomy of gunshot wounds in the war. He was a considerable contributor to medical literature. In addition to the volumes already mentioned, he wrote at different times in his career the articles on thrombosis, embolism, phlebitis, and surgical tuberculosis in Heath's "Dictionary of Medicine," and the articles on rickets, diseases due to microbic infection, and to parasites in Treves's "System of Surgery"; in each case his wide personal knowledge led him to give a practical bearing to his teaching, his association with the Evelina Hospital for Sick Children yielding him often special experience to draw upon.

In 1885 Makins married Mrs. Fellowes, the widow of General Fellowes and the daughter of General Kirkland. This very gifted lady had engaged in nursing the wounded during the Egyptian war, and later became the sister-in-charge of Leopold ward at St. Thomas's Hospital, having intended after the death of General Fellowes to devote her life to nursing, under the ægis of Miss Florence Nightingale, who had expressed the hope that Mrs. Fellowes should ultimately take her place in the nursing world. The marriage was an ideal one and they formed a most devoted couple, the wife entering into all her husband's work so far as this was possible. Thus when he went to South Africa she followed as soon as possible, and whilst he fulfilled his duties as a surgeon, she nursed in or administered a hospital, and was awarded the R.R.C. for her work. She joined her husband in his relaxations as well as in his work, whether these took the form of Alpine climbing, gardening, or the playing of quartets, to all of which Makins was devoted. Fishing and shooting—both of which appealed to Makins—did not, however, have the same charm for her, though she accompanied him on his fishing expeditions to Norway. Lady Makins died in 1931 after a short illness, and sometimes Makins used to say that his life really ended then, although he ever maintained a brave outlook, and shortly before his own death told a friend that he looked back on a very happy life.

In the death of Sir George Makins the profession of medicine has to mourn the loss of a man who deservedly occupied a unique position in our profession owing not merely to his solid achievements in the realm of surgery, as a practical and wise surgeon and teacher, but more especially owing to his high character, integrity, and selfless devotion to the particular duty he had in hand at any one moment. It is given to few men to inspire in others the affectionate regard and esteem that was the special characteristic of Makins, experienced by those who came in contact with him, whether as patients, pupils, colleagues, or friends. All felt in consulting him, whether professionally or for advice in the wider field of human conduct, that not only was the advice given wise and shrewd, but that it was always given absolutely without any thought of self, and was ever guided by the highest motives as to what constituted right and wrong. Makins always inspired confidence owing to this outstanding feature of his character, and those who knew him best were not only fully aware of this but also of his innate modesty, so that sometimes he did not receive the appreciation that was his due. Such occasions were met by him with that quiet smile and peculiar glance of the eyes that meant much in his refined, expressive, and striking face, and that so often took the place of words. He was restrained and reticent in the criticism of others, but no man had a greater contempt for mean actions, and he was singularly shrewd in his perception of such things, although his kind nature made him chary of utterance. If, however, the occasion seemed to him to demand it, he was not slow to take action, and such action rarely failed to achieve the desired result, notwithstanding the quiet manner in which it was done. Under the quiet, truly friendly, and genial manner there was a firmness of character that always remained unshaken and prepared for effective action when the real necessity arose.

FREDERICK JOSEPH WALDO, M.D. Camb., D.P.H.

LATE CORONER FOR THE CITY OF LONDON

THE death occurred on Nov. 2nd of Dr. F. J. Waldo at his house in London at the age of 81. He was for a long period the coroner for the City of London and Southwark, and in the conduct of his public business won high esteem for his energy and efficiency. The son of Bristol parents, he was born in 1852 and educated at Clifton College, whence he proceeded to St. John's College, Cambridge, where he had a successful career as a student. He completed his medical course at St. Bartholomew's Hospital, and graduated as M.B. Camb. in 1880. He held the appointment of house physician at St. Bartholomew's Hospital, and house appointments also at the City of London Hospital for Diseases of the Chest and the East London Hospital for Children. In 1884 he took the M.D. He now did a considerable amount of work on the continent under Pasteur, Koch, Pettenkofer, and other leading continental authorities, and to this equipment he added the D.P.H. Eng. Conj. Bd. His first inclination in practice was towards gynæcology and he became assistant physician to the Chelsea Hospital for Women, but in 1896 he was called to the Bar, and soon after was appointed the first medical officer of health to the Inner and Middle Temples, holding also similar positions in the parish of St. George the Martyr, Southwark. Thenceforward he turned to public health; at his old hospital he became tutor in the subject, and in 1901 was appointed coroner to the City of London, a post which he held for over 30 years, only retiring in 1932.

DR. WALDO

[Photograph by Elliott and Fry

In discharge of his duties as coroner he displayed efficiency and a resolute intention to maintain the dignity of the ancient office of coroner with all its privileges, attaching special importance to his duty in the City of London of holding inquests after fires. In his breezy addresses to juries he said many wise things and showed himself particularly fearless of criticism, with the consequence that probably the obiter dicta of no coroner have been so frequently reported in the public press. In August last a protracted trial ended in the conviction of a gang of fire insurance swindlers, the circumstances in many ways justifying Waldo's views that the survival in the City of London of the responsibility upon the coroner to hold inquiry in other than fatal fires was one which might well be laid again upon all coroners. It was Dr. Waldo's practice to call accountants and fire experts to give evidence. The proceedings in his court usefully drew attention to dangerous structures, and the lack of proper fire escapes and appliances, while his records showed, among other things, that in 25 fire inquests held in the City in the year 1921, in 11 a verdict of arson was returned. One such inquest revealed the work of an alien who was afterwards convicted and deported. In another case the coroner himself, on a prompt personal visit to the scene, discovered an empty petrol can. On this occasion Leopold Harris, one of the gang recently convicted, was closely examined, and it was decided to watch his future association with such matters. Waldo's action was a direct antecedent to the conviction of Harris's criminal gang.

Waldo was selected as Milroy lecturer of the Royal College of Physicians of London in 1900, when he chose for his subject Summer Diarrhœa in Children; the lectures showed that he had made exhaustive inquiry into this fruitful source of infantile mortality in special relation to prevention in urban communities. His professional position and the estimate of him by his colleagues was reflected in his numerous public appointments. He had been hon. secretary of the Coroners Society for England and Wales, president of the London Coroners Association, a special lecturer on medical jurisprudence to the Council of Legal Education, and Master of the Plumbers' Company, of which corporation he wrote a short history. There came also from his pen, in addition to his official statements as coroner, pamphlets upon medico-legal cases, and upon the principles of hygiene and food storage, and an interesting report upon bakehouses.

Dr. Waldo married in 1900 Marion, daughter of the Rev. R. B. Lawson Exton, by whom he had three daughters, who, with his widow, survive him.

EMILE ROUX

THE death of Prof. Roux on Nov. 3rd, less than a week after the death of Calmette, leaves the world in general and the Pasteur Institute in particular much poorer. Roux, the director of the institute, had been suffering for many years from a very chronic form of pulmonary tuberculosis which greatly hampered, though it did not arrest, his activities. Calmette, the assistant director of the institute, ten years younger than Roux, was the robust administrator, taking many a burden off his chief's shoulders. A hæmoptysis last summer filched still a little more of Roux's vitality, and the last few months of his life were dragged through in a state of profound physical debility. But he was still mentally alert and though confined to his bed in the hospital which forms part of the Pasteur Institute, he continued to receive friends and read papers till a few hours before his death. He was visited daily by Calmette in, apparently, the rudest of health. At one time it seemed only a matter of hours before Roux would pass away, and Calmette had prepared an obituary notice of him for *Figaro* which has now appeared, the appreciation of one dead man by another.

PROF. ROUX

[Photograph by E. C. Templier, Paris

Pierre Paul Emile Roux was born on Dec. 17th, 1853, at Confolens, Charente, where his boyhood was spent. His father was the principal of the school he attended. His medical studies were begun at Clermont-Ferrand, where he had the good fortune to attract the attention of Duclaux, the distinguished chemist, and when Duclaux was invited to fill a chair at the Agricultural Institute in Paris, he took Roux with him. On a fateful afternoon in 1878 Duclaux introduced him to Pasteur, whose devoted disciple he remained for life. Roux worked under Duclaux and Pasteur, and in 1883 he published a study on rabies largely inspired by the latter. In the following years a series of communications were made by the two to the Academy of Sciences, and in 1895, on the death of Pasteur, Roux was appointed assistant director of the Pasteur Institute. In 1904 he succeeded Duclaux as director and more than any other upheld the Pasteur tradition.

Roux's contributions to science are far-reaching, for they include not only what he did himself, but what he inspired others to do. Like Pasteur, he had the gift of surrounding himself with brilliant men and of drawing out their best qualities. Much of Pasteur's work on the attenuation of the virulence of certain germs, on chicken cholera, and on the vaccination of sheep and cattle against anthrax was supplemented and amplified by Roux. In 1883 he went to Egypt with Nocard, Straus, and Thuillier to study Asiatic cholera. On his return he worked with Pasteur on rabies ; he investigated the properties of tuberculin with Nocard, those of diphtheria with Yersin, those of tetanus with Vaillard, those of the pleuro-pneumonia of cattle with Nocard and Dujardin-Beaumetz. In other researches he was associated with Metchnikoff. Roux's courses in bacteriology, which he began in 1889, and which were uninterrupted except for the war years, drew pupils from every quarter of the world ; more than 3000 students of all ages and nationalities are said to have attended them.

His work on diphtheria may or may not have been Roux's greatest contribution to medicine, but it is best known. His investigations with Yersin into the nature of diphtheria toxin were the starting-point of Behring's work which led to the discovery of antitoxin. Roux at once grasped the significance of the new discovery and he set out, aided by Nocard, and two young men, Louis Martin and Chaillou—then hospital interns—to explore the therapeutic possibilities of antitoxin. It was a question of providing an antitoxin safe enough for use on human beings. The horse having been found to be a suitable source of supply, Roux and his collaborators worked out the mode of preparation and dosage of the new remedy. His famous communication on this subject to the International Congress of Medicine at Budapest in 1894, claiming antitoxin as of value both as prophylactic and remedy, was based on the observation of 300 cases in the wards of a children's hospital. It was one of life's little ironies that a man of Roux's temperament should be responsible for so sensational an advance in medicine. He had always detested publicity, but here he was announcing a discovery the import of which was grasped at once in the streets. The possibility of diphtheria being rendered harmless, if not banished, appealed to the imagination of a world which with impulsive enthusiasm wanted to buy its freedom from this disease forthwith. *Figaro* opened a public subscription, and in a few weeks more than a million francs had rolled in ; they were devoted to the preparation and distribution of antitoxin by the Pasteur Institute. The new remedy, which had hitherto been limited to a few cases kept under close observation, was now distributed widely and with results with which medicine is now familiar.

Serious illness in 1900 and thereafter was a check on Roux's energies and he lived to direct the labours of others rather than to toil himself. No one will ever know how great a part he played in any piece of research, for he would not let his name be attached to it, alone or in conjunction with that of some junior. It used to be said that only Calmette knew, and Calmette is no more. Roux set a standard of selflessness of which few are capable.

MEDICAL NEWS

University of Oxford

The Theodore Williams scholarship in physiology has been awarded to David Whitteridge.

University of Cambridge

On Nov. 4th the following degrees were conferred :—

M.D.—N. L. White, H. F. Griffiths, and H. B. Stallard.
M.B. and B.Chir.—L. K. Wills, and A. G. Cross.
M.B.—O. A. Trowell.

English Conjoint Examining Board

At the final examination held from Oct. 2nd to 24th the following candidates were approved in the subjects indicated below, but are not yet eligible for diplomas :—

Pathology.—S. H. Alavi, St. Thos. ; N. Angel, Birmingham ; Margaret D. Baber, Univ. Coll. ; H. H. Bayley, Camb. and King's Coll. ; C. H. T. Bond, Camb. and St. Mary's ; J. Boyle, St. Mary's ; J. C. Buckley, Camb. and St. Thos. ; E. J. Bury, Camb. and St. Mary's ; N. A. Buxton, Camb. and Middx. ; A. M. G. Campbell, Oxford and Guy's ; A. M. Chapnick, Westminster ; Dora J. A. Clark, Royal Free ; S. G. Clayton, King's Coll. ; H. M. Clegg, Leeds ; W. B. Clegg, Guy's ; L. A. Collins, Camb. and Charing Cross ; A. N. F. Critchley, St. George's ; G. B. Davis, King's Coll. ; D. W. A. De Gazon, Univ. Coll. ; A. R. O. Denton, Guy's ; A. M. Desmond, London ; J. R. Dickinson, Camb. and Guy's ; Bessie Dodd, Liverpool ; T. S. Eddy, Guy's ; K. C. Eden, Univ. Coll. ; E. A. Evans, Camb. and King's Coll. ; C. S. Ford, Middx. ; A. F. Fowler, St. Thos. ; A. H. T. F. Fullerton, Camb. and Birmingham ; L. B. Furber, St. Bart.'s ; R. H. Gardiner, Oxford and King's Coll. ; D. J. Gilbert and R. J. Gilpin, King's Coll. ; G. B. Grayling, St. George's ; C. E. Greenwood, Oxford and King's Coll. ; T. F. Greenwood, Middx. ; P. Grugeon, King's Coll. ; H. A. Hamilton, Camb. and Guy's ; M. Hamilton, Univ. Coll. ; L. D. Harris, St. Mary's ; Violet C. Hart, Royal Free ; R. R. Henderson, St. Thos. ; G. T. Hindley, Camb. and St. Bart.'s ; R. E. Hirson, Manchester ; I. W. Hockley, St. Thos. ; A. G. Hounslow, Univ. Coll. ; N. G. Hulbert, Camb. and St. Bart.'s ; A. H. Hunt, Oxford and St. Bart.'s ; R. Hussain, Patna and St. Bart.'s ; J. E. Jameson, St. Thos. ; C. C. Jeffery, London ; J. R. R. Jenkins, St. Bart.'s ; E. I. Jones, King's Coll. ; H. W. E. Jones, St. Thos. ; P. G. C. Jones, Guy's ; K. C. Kershaw and Freda H. Knight, Manchester ; J. L. Lanceley, Liverpool ; A. M. Lester, King's Coll. ; T. Levitt, Middx. ; L. Lurie, London ; A. J. McCall, Liverpool ; D. de la C. MacCarthy, St. Bart.'s ; W. M. Macleod, St. Thos. ; W. G. Mills, Camb. and St. Thos. ; R. B. Morton, St. Thos. ; E. J. Moynahan, Univ. Coll. ; G. A. Myers, Otago ; A. Nagi, Royal Free ; M. M. Osher, King's Coll. ; C. G. Pantin, Camb. and Guy's ; W. H. A. Picton, Oxford and King's Coll. ; A. H. Pirie, Camb. and St. Bart.'s ; R. H. Purnell, St. Bart.'s ; E. G. Pyne, Camb. and Charing Cross ; M. S. M. Rayner, Camb. and St. Thos. ; S. A. Razvi, Birmingham ; K. B. Rogers, St. Mary's ; N. S. Sablin, St. Bart.'s ; H. S. K. Sainsbury, London ; S. R. Saunders, Cardiff ; R. Sollenberger, St. Mary's ; R. Spencer, Manchester ; L. W. Spratt, Camb. and St. Thos. ; A. F. Stallard, Camb. and St. Bart.'s ; E. Starling, Oxford and St. Thos. ; J. R. St. G. Stead, London ; A. B. Stenhouse, Oxford and St. Thos. ; K. R. Tattersall, St. Thos. ; J. C. Thomas, Univ. Coll. ; B. Thorne Thorne, Camb. and St. Bart.'s ; R. H. A. Turner, Camb. and Westminster ; G. R. Usmar, Sheffield and St. Bart.'s ; J. K. B. Waddington, Liverpool ; W. Waks, St. Bart.'s ; J. T. Waldie, Guy's ; J. H. Walters, Camb. and King's Coll. ; W. F. Walton, Camb. and St. Thos. ; B. Weiner, St. Bart.'s ; Elizabeth B. White, Royal Free ; Margaret C. Winter, Liverpool ; and Brenda Winterton, Royal Free.

Medicine.—Winifred L. Acraman, Cardiff ; T. M. Bell, Camb. and Charing Cross ; C. J. F. Blumenthal, Guy's ; R. Carpenter, St. Bart.'s ; A. S. Cheong, Singapore and St. Mary's ; L. A. Collins, Camb. and Charing Cross ; Beryl D. Corner, Royal Free ; Margaret C. Cox, Royal Free and West London ; F. H. Culshaw, Camb. and St. Bart.'s ; H. H. Davies, St. Bart.'s ; F. W. Dunn, Charing Cross ; Katharine E. M. Dunne, Camb. and Leeds ; D. G. F. Edward, St. Bart.'s ; E. H. Evison, Manchester ; H. D. Fairman, London ; W. H. Fernando, Ceylon ; A. V. Griffiths, Cardiff ; J. R. Hill, St. Bart.'s ; D. A. Hovenden, St. Thos. ; T. H. Howell and J. Hughes, Camb. and St. Bart.'s ; R. Hussain, Patna and St. Bart.'s ; D. M. Jones and E. G. Jones, St. Bart.'s ; E. I. Jones, J. G. Jones, and G. A Kiloh, King's Coll. ; A. P. R. Lewis, Westminster ; Christia F. Lucas, Birmingham ; J. B. H. McArthur and E. A. Mayston, Guy's ; D. J. M. Moynahan, St. Bart.'s ; R. V. N. Nayudu, Madras and London ; G. P. Neogy, London ; W. S. Noble, Guy's ; F. W. M. Plant, Birmingham ; T. R. F. Raw, Guy's ; D. C. Reavell, St. Bart.'s ; J. D. Richardson, King's Coll. ; A. T. Roden, St. Bart.'s ; S. A. W. Rushbrooke, Guy's ; R. T. Rushton, Leeds ; B. J. Sanger, London ; A. Smith, Leeds ; M. C. L. Smith, St. Bart.'s ; D. L. M. Stewart, King's Coll. ; J. S. F. Sutton, Guy's ; R. J. C. Sutton, St. Bart.'s ; N. Thomas, Royal Free ; C. R. H. Weekes, St. Bart.'s ; J. L.

Whatley, Birmingham; M. W. Williams, Univ. Coll.; and Sylvia V. F. Wolfe, Royal Free.

Surgery.—A. S. Amsden, Guy's; Louie M. M. Beadnell, Univ. Coll.; R. H. R. Belsey and T. A. Best, St. Thos.; I. S. Bhalla, Univ. Coll.; Mary A. M. Bigby, Royal Free; R. A. Binning, Camb. and St. George's; L. C. Bousfield, Middx.; J. Boyle, St. Mary's; Edith J. R. Browne, Royal Free; E. M. Buzzard, Oxford and St. Thos.; K. H. Clark, St. Mary's; C. J. Cobbe, St. Thos.; D. L. L. Davies, St. Bart.'s; Enid S. Davies, Univ. Coll.; Ruth C. Easterling, King's Coll.; W. E. F. Evans, St. Bart.'s; Constance E. Field, Univ. Coll.; P. A. Flood, Camb. and St. Thos.; W. T. J. Fowler, Guy's; J. A. C. Franklin, St. Thos.; H. E. D. Gale, St. Bart.'s; S. S. B. Gilder, London; H. W. Gordon, Wits'rand and Lond.; R. I. N. Greaves, St. Mary's; T. F. Greenwood and I. H. Griffiths, Middx.; A. E. M. Hartley, Camb. and St. Mary's; E. B. Harvey, St. Thos.; W. F. Harvey, London; F. S. M. Heggs, St. Thos.; M. H. Hosny, Birmingham; T. E. Howell, Guy's; J. Hughes, Camb. and St. Bart.'s; J. A. C. Hunter, Guy's; J. R. Hutcheon, London; W. L. Isaac, R. W. John, and I. R. Jones, Cardiff; I. D. Jones, Middx.; J. E. V. Jones, Camb. and St. Thos.; L. E. Jones, St. Thos.; W. M. P. Jones, Cardiff; H. R. Kasday, Middx.; L. M. Kelly, St. Thos.; M. A. Khan, Hyderabad and West Lond.; J. R. Kingdon, St. Bart.'s; J. T. H. Knight, London; J. W. J. Knowles, St. Thos.; Mildred G. Latham, Royal Free; L. F. E. Lewis, Manchester; K. Lumsden, Camb. and St. Bart.'s; L. Lurie, London; J. M. McArthur and J. W. Mansie, Guy's; E. H. Markby, Leeds; J. D. Martin-Jones, St. Bart.'s; R. Mascarenhas, Guy's; H. B. May, Camb. and London; R. A. Morea, London; R. B. Morton, St. Thos.; L. O. Mountford, Camb. and London; J. H. Neal, Middx.; G. P. Neogy, London; P. H. Newman, Middx.; N. C. Oswald, Camb. and Charing Cross; S. Paletz, St. George's; J. E. G. Pearson, Oxford and Middx.; W. H. Phillipps, Camb. and St. Thos.; D. S. Piper, Guy's; A. H. Pirie, Camb. and St. Bart.'s; J. W. Rhys, Guy's; K. B. Rogers, St. Mary's; L. M. Rouillard, St. Thos.; P. H. Sandifer, Middx.; R. S. F. Schilling, St. Thos.; K. G. Seager, St. Mary's; D. J. Sheehan, St. Bart.'s; D. B. Shulman, St. Mary's; H. G. Silvester, Univ. Coll.; L. Sobiya, Guy's; E. Starling, Oxford and St. Thos.; K. F. Stephens, St. Bart.'s; S. Sunkavally, Madras and London; R. E. Thomas, Univ. Coll.; G. C. Tooth, St. Bart.'s; P. A. Wilkinson, Guy's; W. Wilson, Manchester; Brenda Winterton, Royal Free; and B. L. E. Wong, Guy's.

Midwifery.—Joyce M. Ackland, Royal Free; R. A. Andrews, Camb. and Guy's; M. Appelman, St. Bart.'s; R. C. B. Barbor, Camb. and St. Thos.; T. L. Barbour, Guy's; C. Bard, London; C. H. D. Bartley, Camb. and St. Thos.; G. Bates, Birmingham; R. L. Benison, Camb. and St. Bart.'s; P. D. Bhatt, London; D. Bickler, Leeds; R. A. Binning, Camb. and St. George's; E. W. Bintcliffe, St. Bart.'s; R. H. Blazeby, Guy's; C. H. Bliss, St. Thos.; T. A. Blyton, Cardiff; C. H. T. Bond, Camb. and St. Mary's; A. C. E. Breach, St. Thos.; N. P. Brown, Camb. and Middx.; E. J. Bury, Camb. and St. Mary's; N. A. Buxton, Camb. and Middx.; H. Cameron, Guy's; R. F. Clarke, St. Bart.'s; M. C. Condillac, Madras and Westminster; Beryl D. Corner, Royal Free; R. F. Courtin and J. O. Creighton, St. Thos.; E. A. Danino, St. Bart.'s; D. R. Davies, Univ. Coll.; A. J. S. De Freitas, St. Bart.'s; G. M. Denning, Bristol and St. Mary's; Hilda S. F. De Peyer, King's Coll.; A. M. Desmond, London; Dorothy S. R. Drew, Royal Free; G. G. W. Elwell, Camb. and Univ. Coll.; H. J. Fenn, King's Coll.; H. P. Fernandes, St. Bart.'s; A. B. R. Finn, St. Thos.; J. M. Fleming, London; I. C. Fletcher, Camb. and Middx.; C. S. Ford, Middx.; J. F. A. Forster, Guy's; P. S. Fox, Leeds; C. B. Franklin, St. Bart.'s; R. H. Gardiner, Oxford and King's Coll.; K. D. Gibson, Camb. and St. George's; S. W. Gillman, Univ. Coll.; R. J. Gilpin, King's Coll.; [illegible] Univ. Coll.; S. Ginsberg and A. J. Glazebrook, S [illegible] Goodwill, Birmingham; M. E. Gordon, [illegible] wood, Oxford and King's Coll.; P. R. Gi [illegible] Hadley, Camb. and Middx.; J. A. G. Hair, Univ. Coll.; Irene G. Hamilton, Bristol; M. Hamilton, Univ. Coll.; W. H. Hamilton, Dublin and Guy's; W. H. C. M. Hamilton, St. Thos.; Barbara D. F. Hay-Cooper, Royal Free; J. C. Henry and R. C. Hill, Guy's; R. D. Holloway, Camb. and St. George's; A. G. Hounslow, Univ. Coll.; G. B. Hughes and J. R. Hutcheon, London; J. C. Hutchinson, Leeds; Elizabeth M. James, Royal Free; C. C. Jeffery, London; Joyce B. Jewson, Royal Free; D. R. Jones, Cardiff; F. A. Jones, St. Bart.'s; J. T. H. Knight, London; M. Krone, Middx.; Joan F. M. E. Lamplugh, Birmingham; K. A. Latter, St. Bart.'s; J. A. Lewis, St. George's; G. M. Lloyd, St. Bart.'s; A. T. Marrable, St. Thos.; L. C. Martin, Middx.; H. B. May, Camb. and Lond.; S. G. Mayer, London; W. G. Mills, Camb. and St. Thos.; C. Mitchell, Guy's; S. G. Mohler, St. Mary's; J. N. Morris, Univ. Coll.; R. S. Morris, Camb. and St. Thos.; Barbara G. Morton, Royal Free; L. O. Mountford, Camb. and London; S. Mullick, St. Bart.'s; J. T. Murray Aynsley, Camb. and St. Thos.; D. G. Oehlers, London; M. M. Osher, King's Coll.; H. Oweiss, Royal Free; S. H. Pearse, St. Thos.; G. W. V. Pegge, St. Mary's; R. Peters and J. Phillips, Univ. Coll.; R. B. Phillips, Edinburgh and Vienna; R. E. A. Price, London; E. J. Pryn, Guy's; H. S. Rassim, St. Bart.'s; T. A. Ratcliffe, Camb. and St. Thos.; C. Reburn, St. Mary's; S. A. W. Rushbrooke, Guy's; B. D. Sachdeva, Punjab and Guy's; H. V. Sansom, St. Bart.'s; S. R. Saunders, Cardiff; S. G. Shippard, King's Coll.; J. A. Sidebottom, Guy's; G. E. T. Soden, St. Bart.'s; J. R. St. G. Stead, London; R. H. Taylor, Camb. and St. Mary's; Elisabeth J. M. Thomas, Univ. Coll.; Nest Thomas, Royal Free; A. S. Till, Camb. and Middx.; R. H. A. Turner, Camb. and Westminster; R. J. Vakil, St. Thos.; P. A. Walford and W. F. Walton, Camb. and St. Thos.; J. [illegible] Watling, Univ. Coll.; [illegible] B. Weiner, St. Bart.'s; C. T. H. [illegible] Williams, Camb. and St. George [illegible] St. Mary's; Sylvia V. F. Wolfe a[illegible] Free; G. M. Woolford and R. F. [illegible]

Royal College of Surgeons of Edinburgh

The following candidates having passed the final dental examinations have been granted the diploma of L.D.S. R.C.S. Edin.:—

C. P. Moore, B. R. Jennings, W. H. Suffield, G. W. Lager, F. H. Wilson, Edward Waddell, R. N. Fox, R. W. Plummer, R. H. Gardner, Gordon Bennett, A. E. Duvall, T. K. Cheok, C. E. Vincent-Jones, Heinrich Schirnding, J. N. McClarence, W. F. Finlayson, Mackay Campbell, and Edward Whyte.

London School of Hygiene and Tropical Medicine

The next series of eight lectures and demonstrations on tropical hygiene, which are intended for men and women outside the medical profession proceeding to the tropics, will be given by Lieut.-Colonel G. E. F. Stammers, from Dec. 4th to 13th. The synopsis may be had from the *Secretary of the School, Keppel-street, Gower-street,* W.C. 1.

British Health Resorts Association

The annual general meeting of this association will be *held at the Institute of Hygiene, 28, Portland-place,* London, W., at 4 P.M. to-day, Friday, Nov. 10th, when Lord Meston, chairman of the council of the association, will preside.

Pharmaceutical Society of Great Britain

The first evening meeting of the 1933–1934 series will be held in the society's house, 17, Bloomsbury-square, London, W.C., on Tuesday, Nov. 14th, at 8.30 P.M., when Prof. George Barger, F.R.S., professor of chemistry in relation to medicine in the University of Edinburgh, will give a lecture on ergot and ergotism.

Surgical Instrument Manufacturers' Association

The annual dinner of the association was held at the Criterion Restaurant on Oct. 20th, 1933, Mr. Patrick C. Maw presiding. In proposing "The Association," Sir William Wheeler said that there was no surgical operation, simple or grave, that could be performed with any hope of success unless the surgeon had the surgical instrument manufacturers at his back. It was their artistic productions that enabled the art of surgery to be carried out; these things made all the difference between suffering and relief, failure and success, life and death. It was most desirable for the surgeon and the instrument maker to work together as a team. Mr. Maw, in returning thanks, referred to the efforts the association was making to prevent the practice of quackery. Mr. H. Guy Drew proposed "*The Guests*" which was responded to by Dr. Robert Forbes, who welcomed, on behalf of the British Medical Association, the suggestion of opportunities for closer liaison between the medical profession and those who provided it with the apparatus, the appliances and tools. Sir Frederick Hobday added that the veterinary profession owed as much to the surgical instrument maker as did the human surgeon.

Appointments

BROWN, C. M., M.D., Ch.B. Glasg., D.P.H., has been appointed Medical Officer of Health, Dewsbury.

OWEN, DONALD U., M.D. Liverp., D.T.M., Hon. Physician to the Bootle General Hospital.

WHITAKER, P. H., M.B., Ch.B. Liverp., D.M.R.E., Hon. Assistant Radiologist to the Liverpool Royal Infirmary.

Certifying Surgeons under the Factory and Workshop Acts: MORRISON, R. G., L.R.C.P. Lond., M.R.C.S. (Duffield, Derby); *CRAWHALL, T. L., L.R.C.P. Lond.*, M.R.C.S. (Watlington, Oxford).

Births, Marriages, and Deaths

BIRTHS

BAIN.—On Nov. 1st, at Straymede, Harrogate, the wife of Cyril Curtis Bain, M.D., of a son.

CRAWFORD.—At Nyaunghla, Upper Burma, on Oct. 8th, 1933, the wife of W. B. S. Crawford, M.B., B.Ch., of a daughter.

DEATHS

BALY.—On Oct. 31st, Arthur Lionel Baly, M.A. Cantab., M.R.C.S., L.R.C.P. Lond., Medical Superintendent of Lambeth Hospital for 22 years, aged 53.

HUTCHINSON.—On Oct. 4th, at Rochford Hospital, Dr. Harry Hutchinson, M.R.C.S., L.R.C.P., *formerly of 218, Plashet-grove*, East Ham, son of the late Henry Hutchinson, M.R.C.V.S., of Retford, and beloved uncle of Nurse Mary Hutchinson.

JONES.—On Nov. 2nd, at Tudor House, Hillcroft-crescent, Wembley Park, George David Edwards Jones, M.D., F.R.C.S., aged 65.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

PARLIAMENT

NOTES ON CURRENT TOPICS

Reassembly of Parliament

Both Houses of Parliament reassembled on Tuesday, Nov. 7th, after the summer recess. After certain outstanding business has been disposed of the present session will be concluded and the new session will be opened on Nov. 21st by the King in State.

Hospitals and Road Accidents

In the House of Lords on Tuesday, Nov. 7th, the Marquess of Londonderry moved the second reading of the Road and Rail Traffic Bill, which has already passed through the House of Commons. He said that while the Government did not claim that the proposals which they submitted in this measure represented a final solution of the difficult problems connected with the transport industry, they were confident that the Bill represented a substantial contribution to the advancement of public safety and convenience and to a better and more economical organisation of inland transport.

After further debate,

Lord Luke raised the serious position in which many voluntary hospitals were placed by reason of the fact that they were called upon to treat large numbers of motor accidents on the roads. Owing to their accommodation being occupied with such cases, he said, local patients had to wait considerable periods for admission. The hospitals did not ask that motorists should pay anything towards the cost of their buildings or equipment; what they asked was that they should be paid their out-of-pocket expenses in relation to the treatment of road accident cases. At present hospitals were only able to obtain payment of a small proportion of their expenses in this respect. He did not believe that motorists, if they really understood the position, would like to see these poor hospitals continuing to play the Good Samaritan in this way. No Road Traffic Bill could be considered satisfactory unless it enabled the hospitals to get back their out-of-pocket expenses incurred in treating road accidents.

The Earl of Plymouth, replying to the debate on behalf of the Government, said the question raised by Lord Luke in regard to the hospitals had been discussed on several occasions in their Lordships' House. He knew that the representations which Lord Luke had made were always in the mind of the Minister and what he had said would certainly receive consideration.

The Bill was read a second time.

HOUSE OF COMMONS

TUESDAY, NOV. 7TH

Out-Relief

Mr. Lunn asked the Minister of Health the total number of persons receiving out-relief in September, 1931, and at the latest possible date.—Mr. Shakespeare (Parliamentary Secretary to the Ministry of Health) replied: The total number of persons (men, women and children) in receipt of out-relief in England and Wales (excluding persons in receipt of domiciliary medical relief only) on Saturday, Sept. 26th, 1931, was 786,771. The corresponding number on Saturday, Oct. 21st. 1933, was 1,106,871.

Slum Clearance

Mr. Rhys Davies asked the Minister of Health the number of local authorities that had submitted schemes for slum clearance and the number that had been approved by his department.—Mr. Hicks asked the Minister of Health what progress had been made in slum clearance.—Mr. Shakespeare replied: My right hon. friend understands that the questions refer to the later stage of schemes included in resolutions and orders under the Housing Act, 1930, and not to the earlier stage of submitting programmes in response to my right hon. friend's circular of April 6th last. As to the former, up to Oct. 31st, 236 local authorities in England and Wales submitted to the Minister resolutions declaring 1,265 areas comprising 32,839 houses to be clearance areas; 878 Clearance and Compulsory Purchase Orders affecting 23,012 houses were submitted for confirmation and 519 orders made by 139 local authorities affecting 13,133 houses were confirmed: in addition 1,013 houses were purchased by local authorities for demolition without a Compulsory Purchase Order.

Vacancies

For further information refer to the advertisement columns

Bath, Royal United Hospital.—H.S., Out-patient and Cas. O. Each at rate of £150.

Bedford County Hospital.—Second H.S. At rate of £140.

Belgrave Hospital for Children, Clapham-road, S.W.—Asst. Physician. 50 gns.

Birmingham and Midland Hospital for Women.—Acting Hon. Surg. and Reg.

Birmingham, Queen's Hospital.—Res. Med. Reg. At rate of £200.

Bolton Royal Infirmary.—Three H.S.'s. Each £125.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.

Bristol University.—Chair of Anatomy.

Burton-on-Trent General Infirmary.—Cas. O. and H.P. £150.

Cancer Hospital, Fulham-road, S.W.—Res. M.O. £200.

Chelmsford and Essex Hospital and Dispensary.—Res. M.O. £150.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.

Chester Royal Infirmary.—H.P. £150.

Chesterfield and North Derbyshire Royal Hospital.—Res. Surg. O. £300.

City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—Asst. Surg.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.

City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.

Devon County Council.—School Medical Inspector. £500.

Dewsbury and District General Infirmary.—Sen. H.S. £200.

Dorset County Council.—County M.O.H. £1100. Also Two Asst. M.O.'s. Each £500.

Essex County Council.—Asst. County M.O. and Deputy M.O.H. £700.

Exeter Royal Devon and Exeter Hospital.—Hon. M.O. to Radiological and Electrical Dept.

Fulham Hospital, St. Dunstan's-road, Hammersmith, W.—Res. Med. Supt. £1000.

Gloucester, Gloucestershire Royal Infirmary, &c.—Two H.S.'s. Each at rate of £150.

Great Yarmouth General Hospital.—H.S. £140.

Guildford, &c. Rural Districts.—M.O.H. £800.

Home Office, Whitehall, S.W.—Med. Inspector of Factories. £726.

[illegible] of £150.
[illegible] th. Surgeon.
[illegible] £250.
[illegible] -Res. M.O. At rate of £200.

Lambeth Hospital, Brook-street, Kennington.—Res. Med. Supt. £1400.

Lincoln, Bracebridge Mental Hospital.—Fourth Asst. M.O. £350.

Liverpool Radium Institute and Hospital for Cancer.—Two Hon. Surgeons and Hon. Gynæcologist.

Manchester, Christie Hospital and Holt Radium Institute.—Res. Radiological Asst. for X ray Dept. £275.

Manchester, Christie Hospital and Holt Radium Institute—Res. Radiological Asst. £275.

Metropolitan Water Board, 173, Rosebery-avenue, E.C.—Director of Water [illegible]

Miller General [illegible] *S.E.*—Cas. O. and Out-patier[illegible] of £150. Also H.S. and H.P. Each at rate of £100.

New Zealand, Christchurch Hospital.—Asst. Pathologist. £600.

Northampton General Hospital.—H.S. and Cas. O. At rate of £150 and £120 respectively.

Prison Medical Service.—M.O. £505 7s.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Two Res. Anæsthetists. Each at rate of £100.

Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100. Also Clin. Asst. to Orthopædic Dept. 5s. per attendance.

Reading, Royal Berkshire Hospital.—Res. Anæsthetist. £150.

Royal College of Surgeons of England.—Member of the Court of Examiners.

Royal Free Hospital [illegible] *and Gynæcological Unit.*—Sen. Ass[illegible] Third Asst. £270.

Royal National Ortho[illegible] *Portland-street, W.*
Two H.S.'s. fo[illegible] at rate of £150.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E. H.S. At rate of £100.

Salvation Army Mothers' Hospital, Lower Clapton-road, E.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £80 respectively.

Sheffield Royal Hospital.—Clin. Asst. for Ophth. Dept. At rate of £400.

St. Albans and Mid Herts Hospital and Dispensary.—Res. H.S. £150.

St. Leonard's Hospital, Hoxton-street, Shoreditch, N.—H.P. At rate of £80.

Whatley, Birmingham; M. W. Williams, Univ. Coll.; and Sylvia V. F. Wolfe, Royal Free.

Surgery.—A. S. Amsden, Guy's; Louie M. M. Beadnell, Univ. Coll.; R. H. R. Belsey and T. A. Best, St. Thos.; I. S. Bhalla, Univ. Coll.; Mary A. M. Bigby, Royal Free; R. A. Binning, Camb. and St. George's; L. C. Bousfield, Middx.; J. Boyle, St. Mary's; Edith J. R. Browne, Royal Free; E. M. Buzzard, Oxford and St. Thos.; K. H. Clark, St. Mary's; C. J. Cobbe, St. Thos.; D. L. L. Davies, St. Bart.'s; Enid S. Davies, Univ. Coll.; Ruth C. Easterling, King's Coll.; W. E. F. Evans, St. Bart.'s; Constance E. Field, Univ. Coll.; P. A. Flood, Camb. and St. Thos.; W. T. J. Fowler, Guy's; J. A. C. Franklin, St. Thos.; H. E. D. Gale, St. Bart.'s; S. S. B. Gilder, London; H. W. Gordon, Wits'rand and Lond.; R. I. N. Greaves, St. Mary's; T. F. Greenwood and I. H. Griffiths, Middx.; A. E. M. Hartley, Camb. and St. Mary's; E. B. Harvey, St. Thos.; W. F. Harvey, London; F. S. M. Heggs, St. Thos.; M. H. Hosny, Birmingham; T. E. Howell, Guy's; J. Hughes, Camb. and St. Bart.'s; J. A. C. Hunter, Guy's; J. R. Hutcheon, London; W. L. Isaac, R. W. John, and I. R. Jones, Cardiff; I. D. Jones, Middx.; J. E. V. Jones, Camb. and St. Thos.; L. E. Jones, St. Thos.; W. M. P. Jones, Cardiff; H. R. Kasday, Middx.; L. M. Kelly, St. Thos.; M. A. Khan, Hyderabad and West Lond.; J. R. Kingdon, St. Bart.'s; J. T. H. Knight, London; J. W. J. Knowles, St. Thos.; Mildred G. Latham, Royal Free; L. F. E. Lewis, Manchester; K. Lumsden, Camb. and St. Bart.'s; L. Lurie, London; J. M. McArthur and J. W. Mansie, Guy's; E. H. Markby, Leeds; J. D. Martin-Jones, St. Bart.'s; R. Mascarenhas, Guy's; H. B. May, Camb. and London; R. A. Morea, London; R. B. Morton, St. Thos.; L. O. Mountford, Camb. and London; J. H. Neal, Middx.; G. P. Neogy, London; P. H. Newman, Middx.; N. C. Oswald, Camb. and Charing Cross; S. Paletz, St. George's; J. E. G. Pearson, Oxford and Middx.; W. H. Phillipps, Camb. and St. Thos.; D. S. Piper, Guy's; A. H. Pirie, Camb. and St. Bart.'s; J. W. Rhys, Guy's; K. B. Rogers, St. Mary's; L. M. Rouillard, St. Thos.; P. H. Sandifer, Middx.; R. S. F. Schilling, St. Thos.; K. G. Seager, St. Mary's; D. J. Sheehan, St. Bart.'s; D. B. Shulman, St. Mary's; H. G. Silvester, Univ. Coll.; L. Sobiya, Guy's; E. Starling, Oxford and St. Thos.; K. F. Stephens, St. Bart.'s; S. Sunkavally, Madras and London; R. E. Thomas, Univ. Coll.; G. C. Tooth, St. Bart.'s; P. A. Wilkinson, Guy's; W. Wilson, Manchester; Brenda Winterton, Royal Free; and B. L. E. Wong, Guy's.

Midwifery.—Joyce M. Ackland, Royal Free; R. A. Andrews, Camb. and Guy's; M. Appelman, St. Bart.'s; R. C. B. Barbor, Camb. and St. Thos.; T. L. Barbour, Guy's; C. Bard, London; C. H. D. Bartley, Camb. and St. Thos.; G. Bates, Birmingham; R. L. Benison, Camb. and St. Bart.'s; P. D. Bhatt, London; D. Bickler, Leeds; R. A. Binning, Camb. and St. George's; E. W. Bintcliffe, St. Bart.'s; R. H. Blazeby, Guy's; C. H. Bliss, St. Thos.; T. A. Blyton, Cardiff; C. H. T. Bond, Camb. and St. Mary's; A. C. E. Breach, St. Thos.; N. P. Brown, Camb. and Middx.; E. J. Bury, Camb. and St. Mary's; N. A. Buxton, Camb. and Middx.; H. Cameron, Guy's; R. F. Clarke, St. Bart.'s; M. C. Condillac, Madras and Westminster; Beryl D. Corner, Royal Free; R. F. Courtin and J. O. Creighton, St. Thos.; E. A. Danino, St. Bart.'s; D. R. Davies, Univ. Coll.; A. J. S. De Freitas, St. Bart.'s; G. M. Denning, Bristol and St. Mary's; Hilda S. F. De Peyer, King's Coll.; A. M. Desmond, London; Dorothy S. R. Drew, Royal Free; G. G. W. Elwell, Camb. and Univ. Coll.; H. J. Fenn, King's Coll.; H. P. Fernandes, St. Bart.'s; A. B. R. Finn, St. Thos.; J. M. Fleming, London; I. C. Fletcher, Camb. and Middx.; C. S. Ford, Middx.; J. F. A. Forster, Guy's; P. S. Fox, Leeds; C. B. Franklin, St. Bart.'s; R. H. Gardiner, Oxford and King's Coll.; K. D. Gibson, Camb. and St. George's; S. W. Gillman, Univ. Coll.; R. J. Gilpin, King's Coll.; J. G. A. Gilruth, Univ. Coll.; S. Ginsberg and [illegible] e's; Bessie W. Goodwill, Birmingham [illegible] C. E. Greenwood, Oxford and Kin [illegible] Middx.; G. D. Hadley, Camb. and Mid [illegible] Coll.; Irene G. Hamilton, Bristol; M. [illegible] H. Hamilton, Dublin and Guy's; W. [illegible] hos.; Barbara D. F. Hay-Cooper, Ro [illegible] nd R. C. Hill, Guy's; R. D. Hollo [illegible] rge's; A. G. Hounslow, Univ. Coll.; G. B. Hughes and J. R. Hutcheon, London; J. C. Hutchinson, Leeds; Elizabeth M. James, Royal Free; C. C. Jeffery, London; Joyce B. Jewson, Royal Free; D. R. Jones, Cardiff; F. A. Jones, St. Bart.'s; J. T. H. Knight, London; M. Krone, Middx.; Joan F. M. E. Lamplugh, Birmingham; K. A. Latter, St. Bart.'s; J. A. Lewis, St. George's; G. M. Lloyd, St. Bart.'s; A. T. Marrable, St. Thos.; L. C. Martin, Middx.; H. B. May, Camb. and Lond.; S. G. Mayer, London; W. G. Mills, Camb. and St. Thos.; C. Mitchell, Guy's; S. G. Mohler, St. Mary's; J. N. Morris, Univ. Coll.; R. S. Morris, Camb. and St. Thos.; Barbara G. Morton, Royal Free; L. O. Mountford, Camb. and London; S. Mullick, St. Bart.'s; J. T. Murray Aynsley, Camb. and St. Thos.; D. G. Oehlers, London; M. M. Osher, King's Coll.; H. Oweiss, Royal Free; S. H. Pearse, St. Thos.; G. W. V. Pegge, St. Mary's; R. Peters and J. Phillips, Univ. Coll.; R. B. Phillips, Edinburgh and Vienna; R. E. A. Price, London; E. J. Pryn, Guy's; H. S. Rassim, St. Bart.'s; T. A. Ratcliffe, Camb. and St. Thos.; C. Reburn, St. Mary's; S. A. W. Rushbrooke, Guy's; B. D. Sachdeva, Punjab and Guy's; H. V. Sansom, St. Bart.'s; S. R. Saunders, Cardiff; S. G. Shippard, King's Coll.; J. A. Sidebottom, Guy's; G. E. T. Soden, St. Bart.'s; J. R. St. G. Stead, London; R. H. Taylor, Camb. and St. Mary's; Elisabeth J. M. Thomas, Univ. Coll.; Nest Thomas, Royal Free; A. S. Till, Camb. and Middx.; R. H. A. Turner, Camb. and Westminster; R. J. Vakil, St. Thos.; P. A. Walford and W. F. Walton, Camb. and St. Thos.; J. D. S. Watling, Univ. Coll.; B. Weiner, St. Bart.'s; C. T. H. Whiteside, St. Thos.; M. Williams, Camb. and St. George's; W. C. Winterbottom, St. Mary's; Sylvia V. F. Wolfe and Audrey R. Wood, Royal Free; G. M. Woolford and R. F. Wyatt, St. Thos.

Royal College of Surgeons of Edinburgh

The following candidates having passed the final dental examinations have been granted the diploma of L.D.S. R.C.S. Edin.:—

C. P. Moore, B. R. Jennings, W. H. Suffield, G. W. Lager, F. H. Wilson, Edward Waddell, R. N. Fox, R. W. Plummer, R. H. Gardner, Gordon Bennett, A. E. Duvall, T. K. Cheok, C. E. Vincent-Jones, Heinrich Schirnding, J. N. McClarence, W. F. Finlayson, Mackay Campbell, and Edward Whyte.

London School of Hygiene and Tropical Medicine

The next series of eight lectures and demonstrations on tropical hygiene, which are intended for men and women outside the medical profession proceeding to the tropics, will be given by Lieut.-Colonel G. E. F. Stammers, from Dec. 4th to 13th. The synopsis may be had from the Secretary of the School, Keppel-street, Gower-street, W.C. 1.

British Health Resorts Association

The annual general meeting of this association will be held at the Institute of Hygiene, 28, Portland-place, London, W., at 4 P.M. to-day, Friday, Nov. 10th, when Lord Meston, chairman of the council of the association, will preside.

Pharmaceutical Society of Great Britain

The first evening meeting of the 1933–1934 series will be held in the society's house, 17, Bloomsbury-square, London, W.C., on Tuesday, Nov. 14th, at 8.30 P.M., when Prof. George Barger, F.R.S., professor of chemistry in relation to medicine in the University of Edinburgh, will give a lecture on ergot and ergotism.

Surgical Instrument Manufacturers' Association

The annual dinner of the association was held at the Criterion Restaurant on Oct. 20th, 1933, Mr. Patrick C. Maw presiding. In proposing "The Association," Sir William Wheeler said that there was no surgical operation, simple or grave, that could be performed with any hope of success unless the surgeon had the surgical instrument manufacturers at his back. It was their artistic productions that enabled the art of surgery to be carried out; these things made all the difference between suffering and relief, failure and success, life and death. It was most desirable for the surgeon and the instrument maker to work together as a team. Mr. Maw, in returning thanks, referred to the efforts the association was making to prevent the practice of quackery. Mr. H. Guy Drew proposed "The Guests" which was responded to by Dr. Robert Forbes, who welcomed, on behalf of the British Medical Association, the suggestion of opportunities for closer liaison between the medical profession and those who provided it with the apparatus, the appliances and tools. Sir Frederick Hobday added that the veterinary profession owed as much to the surgical instrument maker as did the human surgeon.

Appointments

BROWN, C. M., M.D., Ch.B. Glasg., D.P.H., has been appointed Medical Officer of Health, Dewsbury.

[illegible] M.D. Liverp., D.T.M., Hon. Physician to the [illegible] tal.

[illegible] B., Ch.B. Liverp., D.M.R.E., Hon. [illegible] to the Liverpool Royal Infirmary.

Certi [illegible] r the Factory and Workshop Acts: [illegible] L.R.C.P. Lond., M.R.C.S. (Duffield, [illegible] T. L., L.R.C.P. Lond., M.R.C.S. [illegible]

Births, Marriages, and Deaths

BIRTHS

BAIN.—On Nov. 1st, at Straymede, Harrogate, the wife of Cyril Curtis Bain, M.D., of a son.

CRAWFORD.—At Nyaunghla, Upper Burma, on Oct. 8th, 1933, the wife of W. B. S. Crawford, M.B., B.Ch., of a daughter.

DEATHS

BALY.—On Oct. 31st, Arthur Lionel Baly, M.A. Cantab., M.R.C.S., L.R.C.P. Lond., Medical Superintendent of Lambeth Hospital for 22 years, aged 53.

HUTCHINSON.—On Oct. 4th, at Rochford Hospital, Dr. Harry Hutchinson, M.R.C.S., L.R.C.P., formerly of 218, Plashet-grove, East Ham, son of the late Henry Hutchinson, M.R.C.V.S., of Retford, and beloved uncle of Nurse Mary Hutchinson.

JONES.—On Nov. 2nd, at Tudor House, Hillcroft-crescent, Wembley Park, George David Edwards Jones, M.D., F.R.C.S., aged 65.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

PARLIAMENT

NOTES ON CURRENT TOPICS

Reassembly of Parliament

BOTH Houses of Parliament reassembled on Tuesday, Nov. 7th, after the summer recess. After certain outstanding business has been disposed of the present session will be concluded and the new session will be opened on Nov. 21st by the King in State.

Hospitals and Road Accidents

In the House of Lords on Tuesday, Nov. 7th, the MARQUESS OF LONDONDERRY moved the second reading of the Road and Rail Traffic Bill, which has already passed through the House of Commons. He said that while the Government did not claim that the proposals which they submitted in this measure represented a final solution of the difficult problems connected with the transport industry, they were confident that the Bill represented a substantial contribution to the advancement of public safety and convenience and to a better and more economical organisation of inland transport.

After further debate,

Lord LUKE raised the serious position in which many voluntary hospitals were placed by reason of the fact that they were called upon to treat large numbers of motor accidents on the roads. Owing to their accommodation being occupied with such cases, he said, local patients had to wait considerable periods for admission. The hospitals did not ask that motorists should pay anything towards the cost of their buildings or equipment; what they asked was that they should be paid their out-of-pocket expenses in relation to the treatment of road accident cases. At present hospitals were only able to obtain payment of a small proportion of their expenses in this respect. He did not believe that motorists, if they really understood the position, would like to see these poor hospitals continuing to play the Good Samaritan in this way. No Road Traffic Bill could be considered satisfactory unless it enabled the hospitals to get back their out-of-pocket expenses incurred in treating road accidents.

The Earl of PLYMOUTH, replying to the debate on behalf of the Government, said the question raised by Lord Luke in regard to the hospitals had been discussed on several occasions in their Lordships' House. He knew that the representations which Lord Luke had made were always in the mind of the Minister and what he had said would certainly receive consideration.

The Bill was read a second time.

HOUSE OF COMMONS

TUESDAY, NOV. 7TH

Out-Relief

Mr. LUNN asked the Minister of Health the total number of persons receiving out-relief in September, 1931, and at the latest possible date.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: The total number of persons (men, women and children) in receipt of out-relief in England and Wales (excluding persons in receipt of domiciliary medical relief only) on Saturday, Sept. 26th, 1931, was 786,771. The corresponding number on Saturday, Oct. 21st, 1933, was 1,106,871.

Slum Clearance

Mr. RHYS DAVIES asked the Minister of Health the number of local authorities that had submitted schemes for slum clearance and the number that had been approved by his department.—Mr. HICKS asked the Minister of Health what progress had been made in slum clearance.—Mr. SHAKESPEARE replied: My right hon. friend understands that the questions refer to the later stage of schemes included in resolutions and orders under the Housing Act, 1930, and not to the earlier stage of submitting programmes in response to my right hon. friend's circular of April 6th last. As to the former, up to Oct. 31st, 236 local authorities in England and Wales submitted to the Minister resolutions declaring 1,265 areas comprising 32,839 houses to be clearance areas; 878 Clearance and Compulsory Purchase Orders affecting 23,012 houses were submitted for confirmation and 519 orders made by 139 local authorities affecting 13,133 houses were confirmed: in addition 1,013 houses were purchased by local authorities for demolition without a Compulsory Purchase Order.

Vacancies

For further information refer to the advertisement columns

Bath, Royal United Hospital.—H.S., Out-patient and Cas. O. Each at rate of £150.

Bedford County Hospital.—Second H.S. At rate of £140.

Belgrave Hospital for Children, Clapham-road, S.W.—Asst. Physician. 50 gns.

Birmingham and Midland Hospital for Women.—Acting Hon. Surg. and Reg.

Birmingham, Queen's Hospital.—Res. Med. Reg. At rate of £200.

Bolton Royal Infirmary.—Three H.S.'s. Each £125.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.

Bristol University.—Chair of Anatomy.

Burton-on-Trent General Infirmary.—Cas. O. and H.P. £150.

Cancer Hospital, Fulham-road, S.W.—Res. M.O. £200.

Chelmsford and Essex Hospital and Dispensary.—Res. M.O. £150.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.

Chester Royal Infirmary.—H.P. £150.

Chesterfield and North Derbyshire Royal Hospital.—Res. Surg. O. £300.

City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—Asst. Surg.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.

City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.

Devon County Council.—School Medical Inspector. £500.

Dewsbury and District General Infirmary.—Sen. H.S. £200.

Dorset County Council.—County M.O.H. £1100. Also Two Asst. M.O.'s. Each £500.

Essex County Council.—Asst. County M.O. and Deputy M.O.H. £700.

Exeter Royal Devon and Exeter Hospital.—Hon. M.O. to Radiological and Electrical Dept.

Fulham Hospital, St. Dunstan's-road, Hammersmith, W.—Res. Med. Supt. £1000.

Gloucester, Gloucestershire Royal Infirmary, &c.—Two H.S.'s. Each at rate of £150.

Great Yarmouth General Hospital.—H.S. £140.

Guildford, &c. Rural Districts.—M.O.H. £800.

Home Office, Whitehall, S.W.—Med. Inspector of Factories. £726.

H[illegible] [illegible] O. At rate of £150.

I[illegible] —Hon. Ophth. Surgeon.

I[illegible] —Res. M.O. £250.

Kettering and District General Hospital.—Res. M.O. At rate of £200.

Lambeth Hospital, Brook-street, Kennington.—Res. Med. Supt. £1400.

Lincoln, Bracebridge Mental Hospital.—Fourth Asst. M.O. £350.

Liverpool Radium Institute and Hospital for Cancer.—Two Hon. Surgeons and Hon. Gynæcologist.

Manchester, Christie Hospital and Holt Radium Institute.—Res. Radiological Asst. for X ray Dept. £275.

[illegible]nchester, Christie Hospital and Holt Radium Institute.—Res. Radiological Asst. £275.

Metropolitan Water Board, 173, Rosebery-avenue, E.C.—Director of Water Examinations. £2000.

Miller General Hospital, Greenwich-road, S.E.—Cas. O. and Out-patient Officer. Each at rate of £150. Also H.S. and H.P. E[illegible]h at rate of £100.

New Zealand, [illegible] —Asst. Pathologist. £600.

Northampton [illegible] and Cas. O. At rate of £150 and [illegible]

Prison Medic[illegible] 7s.

Queen Charlotte's Ma[illegible]nity Hospital, Marylebone-road, N.W.—Two Res. Anæsth[illegible]sts. Each at rate of £100.

Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at [illegible] of £100. Also Clin. Asst. to Orthopædic Dept. [illegible] 5s. per attendance.

Reading, Royal Berkshire Hospital.—Res. Anæsthetist. £150.

Royal College of Surgeons of England.—Member of the Court of Examiners.

Royal Free Hospital, &c., W.C. Obstetrical and Gynæcological Unit.—Sen. Asst. At rate of £350. Also Third Asst. £270.

Royal National Orthopædic Hospital, 234, Great Portland-street, W. Two H.S.'s. for Country Branch. Each at rate of £150.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E. H.S. At rate of £100.

Salvation Army Mothers' Hospital, Lower Clapton-road, E.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £80 respectively.

Sheffield Royal Hospital.—Clin. Asst. for Ophth. Dept. At rate of £400.

St. Albans and Mid Herts Hospital and Dispensary.—Res. H.S. £150.

St. Leonard's Hospital, Hoxton-street, Shoreditch, N.—H.P. At rate of £80.

St. Mary Islington Hospital, Highgate-hill, N.—Asst. M.O. £250.
Taunton and Somerset Hospital.—Hon. Physician.
University College Hospital, Gower-street, W.C.—Hon. Anæsthetist. Also Obstet. Registrar. £125.
West Ham County Borough.—Two Temporary District M.O.'s. Each £270.
West London Hospital, Hammersmith-road, W.—Cas. O. £250.
Westminster Hospital, Broad Sanctuary, S.W.—H.S. to Ear, Nose, Throat and Eye Dept. At rate of £104.
Willesden Municipal (Fever) Hospital, Brentfield-road, N.W.—Res. M.O. £250.
Windsor, King Edward VII. Hospital.—Two H.S.'s. Each at rate of £100.
York County Hospital.—Res. Anæsthetist and Asst. H.S. £150.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Carlisle, Cumberland; Haltwhistle, Northumberland; and Eye, Suffolk.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 14th.—5 P.M., THERAPEUTICS and PHARMACOLOGY. *Suprarenal and Pituitary Tumours and their Correlation with Experimental Findings.* Discussion to be opened by Prof. H. H. Woollard and Dr. R. D. Lawrence, followed by Dr. Gordon Holmes, Dr. F. Parkes Weber, Dr. P. M. F. Bishop, and others. *Members of the Section of Neurology are specially invited.* 8.30 P.M., PSYCHIATRY. Dr. Edward Mapother: Tough or Tender, a Plea for Nominalism in Psychiatry. (Presidential address).

THURSDAY.—5 P.M., DERMATOLOGY (Cases at 4 P.M.). Dr. Evelyn M. Holmes: *Some Aspects of Dermatological Work in Denmark.* Illustrated by lantern slides. Cases. Dr. H. Semon and Dr. Burrell: (1–4) Tuberculosis of the Skin treated by Injections of Tuberculin. Dr. H. Barber: (5) [illegible] in the *East African* N[illegible] of Tropical Diseases are specially invited to attend.

FRIDAY.—5.30 P.M., PHYSICAL MEDICINE. Demonstration. Dr. James B. Mennell: Manipulative methods applied to the Lower E[illegible] pædics Section [illegible] OBSTETRICS and [illegible] Treatment of the [illegible] to be opened b[illegible] Osman, and Mr. J. Bright Banister. 8.30 P.M., RADIOLOGY. *The Importance of Posture in Radiodiagnosis.* Discussion openers, Dr. E. W. Twining: The Skull. Dr. J. V. Sparks: The Chest. Dr. G. B. Bush: The Abdomen.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, Nov. 16th.—8.15 P.M. (at the Hospital for Tropical Dis[illegible] Gordon-street, W.C.). Clini[illegible]wing, amongst others, will g[illegible] P. A. Buxton, Sir Rickard [illegible]ther Cordiner, Dr. G. M. [illegible] Lane, Dr. G. Carmichael L[illegible] Dr. P. Manson-Bahr, and D[illegible] Cinematograph films will be [illegible]1) Dr. Monckton Copeman, showing the killing of cells (Protozoa) by invisible ultra-violet light; (2) Dr. P. Manson-Bahr, showing the clinical picture of cerebral trypanosomiasis in a European.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Nov. 13th.—8 P.M.: Clinical Evening. Barba[illegible]

THURSDAY.—5 P.M., Sir Humphry Rolleston: [illegible] of Medical Men with Literature (Lloyd Roberts Lecture).

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Nov. 14th.—9 P.M. (at the Great Western Royal Hotel, Paddington), Dr. Killick Millard: Euth[illegible]sia.

LECTURES, ADDRESSES, DEMONSTRATIO[illegible], &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, Nov. 14th.—5 P.M., Dr. William G. Savage: Human Tuberculosis of Bovine Ori[illegible] (Mitchell Lecture).

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, Nov. 13th.—5 P.M., Mr. R. Davie[illegible]-Colley: Specimens illustrating Diseases of Muscles.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 13th, to SUNDAY, Nov. 19th.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Evening M.R.C.P. Course. Tues. and Thurs., at 8 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Course in Medicine, Surgery, and Gynæcology. All day.—ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C. Course in Urology for advanced post-graduates. All day.—CITY OF LONDON HOSPITAL, Victoria Park, E. Course in Diseases of the Chest. All day.—LONDON LOCK HOSPITAL, Dean-street, W. Course in Venereal Disease. Afternoons and Evenings.—SAMARITAN HOSPITAL FOR WOMEN, Marylebone-road, N.W. Week-end Course in Gynæcology. All day Sat. and Sun.—B.M.A. HOUSE, Tavistock-square, W.C. A Lecture by Dr. William Moodie, on Mond. at 8.30 P.M., on *Child Psychiatry and its Bearing on Behaviour.*—PANEL OF TEACHERS. Individual clinics are available daily by arrangement with the Fellowship of Medicine. Courses, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

MONDAY, Nov. 13th.—10 A.M., Dr. Hutchison: Ward Visit. 10.45 A.M., Dr. Wyllie: Medical Out-patients. 11.30 A.M., Mr. Lloyd: Surgical Out-patients. 2 P.M., Dr. Thursfield: Ward Visit.

TUESDAY.—10 A.M., Dr. Schlesinger: Medical Out-patients. 10.45 A.M., Mr. Higgins: Surgical Out-patients. 11.30 A.M., Pathological or Biochemical Demonstration. 2.30 P.M., Dr. Frew: Ward Visit.

WEDNESDAY.—10 A.M., Dr. Poynton: Ward Visit. 10.45 A.M., Dr. Paterson: Medical Out-patients. 10.45 A.M., Dr. Gray: Skin Dept. (Out-patients.) 11.30 A.M., Mr. Barrington-Ward: Surgical Out-patients. 2 P.M., Mr. Apperly: Dental Dept. (Out-patients).

THURSDAY.—10 A.M., Dr. Hutchison: Ward Visit. 10.45 A.M., Dr. Cockayne: Medical Out-patients. 11.30 A.M., Mr. Tyrrell-Gray: Surgical Out-patients. 2 P.M., Dr. Thursfield: Ward Visit. Mr. Higgins and Dr. Sington: Tonsils and Adenoids and Anæsthesia. (Demonstration.)

FRIDAY.—10.30 A.M., Dr. Pearson: Medical Out-patients. 11.15 A.M., Mr. Addison: Surgical Out-patients. 2.30 P.M., Dr. Frew: Ward Visit.

SATURDAY.—10 A.M., Dr. Poynton. Mr. Penman: Ophthalmic Dept. (Out-patients). 11 A.M., Mr. Browne: Surgical Out-patients.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Chandos-street, W.C.

SUNDAY, Nov. 12th.—10.30 A.M., Mr. Eric A Crook: The Later Stages of Malignant Disease. 11.45 A.M., Mr. E. D. D. Davis: Acute Infective Catarrh.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Nov. 16th.—4.30 P.M., Dr. J. A. Glover: Preventable Diseases of School-children. 9 P.M., Dr. C. Newman: Liver Function Failure.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Nov. 17th.—4 P.M., Mr. A. Lowndes Yates: Demonstration of Audiography.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL Post-graduate Lectures.

WEDNESDAY, Nov. 15th.—4 P.M., Dr. H. G. Gage: Recent Advances in Radiology.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Nov. 15th.—4.30 P.M., Dr. A. Fraser Whyte: Genito-urinary Anæsthetics.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Nov. 14th.—5 P.M., Dr. H. W. Barber: Bacteriology and Mycology.

WEDNESDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Nov. 13th.—3.30 P.M., Dr. Kinnier Wilson: *Disorders of Cerebral function: aphasia, apraxia, &c.*

TUESDAY.—3.30 P.M., Dr. Denny Brown: Brain stem reflexes.

WEDNESDAY.—3.30 P.M., Dr. Collier: *Clinical Demonstration.*

THURSDAY.—3.30 P.M., Dr. Walshe: The Motor System.

FRIDAY.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses [illegible] day at 2 P.M.

SOU[illegible] POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Nov. 15th.—4 P.M., Major M. Sinclair: *Fractures and Dislocations in General Practice—Practical Hints.*

ROYAL INSTITUTE OF PUBLIC HEALTH, 23, Queen-square, W.C.

WEDNESDAY, Nov. 15th.—4 P.M., Dame Georgina Butler: *Citizenship and the Care of Cripples.*

CHADWICK PUBLIC LECTURES.

TUESDAY, Nov. 14th.—5.30 P.M. (at Manson House, Portland-place, W.), Dr. R. O. Moon: *Housing and Town Planning in Relation to Public Health* (Malcolm Morris Memorial Lecture). 8 P.M. (at the University, Reading), Mr. E. G. Haygarth Brown: Standards of Food in Relation to Public Health.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Nov. 16th.—4.15 P.M., Dr. R. Ellis: Carcinoma of Lung.

MANCHESTER HOSPITAL FOR CONSUMPTON AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate, Manchester.

WEDNESDAY, Nov. 15th.—4.30 P.M., Mr. V. F. Lambert: *Mastoiditis.*

GLASGOW Post-graduate Lectures.

TUESDAY, Nov. 14th.—3.30 P.M. (in the Faculty Hall, Vincent-street), Prof. A. Hunter: Rôle of the Vitamins. 4.15 P.M. (at the Royal Hospital for Sick Children), Prof. G. Fleming: Medical Cases.

LEEDS GENERAL INFIRMARY.

TUESDAY, Nov. 14th.—4 P.M., Dr. Moll: Demonstration of Chest Cases.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Nov. 14th.—4.15 P.M., Mr. A. H. Southam: *Surgical Lesions of the Anal Canal.*

FRIDAY.—4.15 P.M., Mr. C. Roberts: Demonstration of Surgical Cases.

NOTES, COMMENTS, AND ABSTRACTS

SANITATION IN MEDIÆVAL MONASTERIES

IN a Chadwick lecture given in London on Nov. 2nd Dr. Percy Flemming pointed out that the builders and engineers of the mediæval monastery had to provide sanitary arrangements for a household which might number 50–60 or, at times, 70 monks with a large number of lay brothers in addition. Their work reached a high standard of efficiency—a standard not maintained in the centuries that immediately followed their dissolution.

At first the monasteries were dependent on wells for their water-supply, but later a supply by gravitation became the rule. The twelfth century plan of the monastery of Christ Church, Canterbury, shows that the water was collected into a conduit house some distance from the city, whence it was conveyed to the monastery through lead pipes which passed the water through five settling tanks before reaching the city wall. Similar tanks are shown on the fifteenth century plan of the water-supply of the London Masterhouse. Within the monastic precincts the water was conveyed in the first place to the infirmary, then to the lavatories for hand washing, and thence to the various domestic offices. There were two types of lavatory: an earlier one consisting of an octagonal building containing a basin of similar shape, and a later one, much more common, in the form of a lead-lined stone trough which either projected into the cloister park or was fixed in a recess or either side of the frater door. Baths were provided for guests and for medical purposes, but the rule forbade their regular use by the monks. The lay-out of the monastic buildings was arranged to secure efficient drainage. The great drain was flushed either by turning the tail of the mill race into it or by letting the waste water run through it. The sanitary block (*domus necessaria* or *necessarium*) was placed over the great drain or a running stream. Privies were arranged in rows placed over the drain or stream, each being lighted by a small window or separated from its neighbours by a wooden partition. A doorway led from the dormitory to the sanitary block. At Canterbury there were 55 privies.

The Carthusian monastery required a different plan, for each monk lived alone in a cell situated in the corner of a little garden. Water was supplied to each cell by means of a lead pipe, the tap being placed in a recess in the lobby of the cell. Each cell had a separate privy reached through a door in the back wall of the garden, the path from the cell to the privy being protected by a wooden penticle. At Mount Grace Priory the privies were placed over a running stream just outside the garden wall.

IN DEFENCE OF ROTUNDITY

Dr. Christopher Howard writes: "Will you grant me the hospitality of your columns to protest on behalf of the obese, amongst whom I am proud to acknowledge myself no small member, against the pseudo-scientific pontifical pronouncements which have lately been reported by you and by others who lack your wisdom (see THE LANCET, Oct. 14th, p. 871; Oct. 28th, p. 994). It is true that in a leading article you have refused to subscribe to the pronouncement that reduction of weight is conditioned simply by the fortitude of the patient, and perhaps you would not willingly align yourself with those superior beings who, in your current issue, refer to us as 'those unfortunates.' In one breath we are denied virility, and in the next classed with the sad sisterhood! It is presumably beyond the comprehension of our critics that phylogenesis is a stronger force than ontogenesis, and that the protoplasmic experience of centuries is worth more than the laboured deductions of individual minds (even the minds of the thin). If you rob a fat man of his fat you force him to run counter to his ancestral chromosomes. Attenuated beings who gorge to the full and yet continue to look tænial have the impertinence to accuse us of greed because we eat when we are hungry. If, from foolish fear of the mirth which our jolly and rotund appearance often provokes in the animated skeletons who lecture us, we are constrained to deny ourselves, we either deservedly fall victims to some intercurrent disease or develop duodenal ulcers—or remain fat. In the latter contingency we are then insulted and told that we suffer from a lack of glandular balance. As a class we are not easily moved to wrath—not because we are Fröhlichs but because we are philosophers—and we have allowed a host of professors and dietitians (foul and misbegotten word) to give vent to opinions conceived in the sterility of the laboratory, dead products of insufficient mental digestion or gestation. Will you, Sir, publish abroad the fact that we glory in our fat, our laughter, our good temper, our sociability, our appreciation of food and drink, and company? We would rather die in full possession of our faculties in our middle age than totter about in scrawny-legged misery for a few extra years, lean and lonely lepers, suspicious and suspected. We will not be pitied—for we glory in our curves—nor condemned, either as financial criminals (the silliest statement I ever saw in a scientific journal) or lazy loungers. We are the salt of the earth, so let us damn the diet writers and stick to our savoury."

TREATMENT FOR CASES OF META FUEL POISONING

IN view of the two deaths recorded in this country of adults who have swallowed Meta fuel, the following course of treatment recommended by Dr. Laszlo Wamoscher, associate professor at the Hygiene Institute, University of Berlin, has been submitted to us for publication by the agents for its sale in Great Britain, Messrs. Elmesan (London), Ltd.

1. Immediate washouts of the stomach with large quantities of sod. bicarb. solution. These should be repeated frequently and performed slowly for the first time on account of the development of CO_2. (It is essential to neutralise the acidity in the stomach since meta fuel does not depolymerise in alkaline medium and only the products of depolymerisation are toxic.)
2. High colon washouts with alkaline solutions.
3. Purgatives after washing out: Glauber salts or castor oil. No phenolphthalein or acids.
4. Large quantities of charcoal by the mouth, preferably wood charcoal.
5. For the heart: caffeine and if necessary strophanthin, intravenously.
6. Narcotics should be avoided if possible. Intensive cramp should be treated by the sodium salt of Veronal.
7. Intravenous injections of calcium (Sandoz) and repeated intravenous injections of 30–40 per cent. glucose.

We are informed that meta fuel is a pure uniform organic chemical substance, namely, metaldehyde, a polymer of acetaldehyde.

THE "HYGENICAP"

UNDER this title Messrs. P. Cassin, Ltd., of 19, Eastcheap, London, E.C. (the patentees), have called our attention to a collapsible metal tube such as is used for ointments and tooth pastes, with a new form of cap. This cap is a cork-lined disk fitted eccentrically to the opening of the tube in such a manner that, on being revolved, its cutting edge removes the seal from the opening of the tube, the opening being closed at the same time. The principle of the wedge is used to keep the cork-lined cover pressed tightly. This ingenious way of closing collapsible tubes seems to be effective and convenient, and should prevent the annoyance and danger of contamination of the contents of the tube, resulting from a lost screw cap, as well as doing away with the trouble of piercing a hard seal.

A PLAY ABOUT ED·NB·RGH STUDENTS

It is perhaps a pity that the fashion of having alternative titles has lapsed. For example, the intending playgoer would have a better idea of "The Wind and the Rain," now produced at the St. Martin's Theatre in London, if the author had added: "or Beer and Bones." Some at least would wish to be excused from taking the troubles of the hero too seriously, but most of us would enjoy spending a few hours among his engaging companions. The action takes place in a thinly disguised Scottish university city—its nearest golfing centre is North Berwick—and the scene is the common room of a students' lodging-house. Mrs. McFee, the landlady, confesses to a penchant for medical students, which perhaps explains why we meet only members of that faculty. When the play begins the hero, Charles Tritton, is arriving, an enthusiastic "fresher"; a large parcel of bones and "Gray's Anatomy" seem to be his principal luggage. At the end of the play he is already a doctor of some three weeks' standing and five years have elapsed. If the chronology of the play is somewhat atypical—the session opens in mid-September, and within a fortnight of his introduction to medicine the fresher is already hard at work in the dissecting-room—we may accept its aberrations as the author's contribution to the vexed question of the medical curriculum, and remain grateful for the light-hearted company to which he introduces us. In Charles Tritton's three fellow-lodgers are portrayed three types of students: Paul Duhamel, the older man, who is spasmodically working for his fellowship; Gilbert Raymond, who is equally at home with a gramophone and a ukelele, but usually feels after an examination that he should write to the examiners and apologise for having troubled them; John Williams, who has many athletic interests but also contrives to absorb a certain amount of medical knowledge. Of the undergraduates, Tritton, as befits a hero, alone completes his course in five years. The plot, however, is less convincing than the background and atmosphere. The author has given so much charm and kindliness to Anne Hargraves, whom Tritton meets in Edinburgh, and so little to Jill Mannering, whom his mother has chosen as a possible wife for him, that his conflict of loyalties does not move us, especially as we never see the mother. Miss Celia Johnson plays Anne so graciously that our bewilderment at his difficulty in choice is only increased.

The title of the play and the admittedly humid climate of Edinburgh are both over-emphasised by the soused trench-coat which every male member of the cast always wears on entering.

UNDULANT FEVER IN PERSIA

Two members of the staff of the Russian Soviet's Hospital at Teheran report[1] 14 cases of "Malta fever" admitted to that hospital in the last half of 1932, 11 of them under the authors' care. The fever was characterised by the usual temperature curve with relapses, profuse sweating and constipation, and arthralgia towards the end. Of their 14 patients, 1 died, 7 recovered (averaging 7 relapses each), and 3 remained under treatment. Some fell ill in Teheran, other cases were infected elsewhere and were sent in for further examination after prolonged and profitless treatment, mainly for malaria. Of the 14 cases, 12 were diagnosed by blood culture, which was usually positive if the temperature was above 102° F., but was only twice positive at as low a temperature as 100·5°. Few cases were seen earlier than the second month, but one of the authors, infected in the laboratory, had a positive blood culture (temperature 101°) 15 days before his fever began. The blood of every patient agglutinated *Micrococcus melitensis* in dilutions 1/200 or 1/1600 except for two, a mother and son; the complement-fixation reaction also was negative in these two cases. The authors made their cultures themselves and inoculated rabbits at Teheran, but later they got cultures of *M. melitensis* and *Brucella abortus* Bang from Baku, and the results were identical. They ascribe the individual cases to sheep and goat's cheese and, in Teheran, to goat's milk. None of the patients had anything to do with cattle and they came from north and central Persia. The paper is followed by a note from Dr. M. Mayer, of the Hamburg Hospital for Tropical Diseases, telling that a specimen of Malta fever blood had been recently sent him from Teheran for diagnosis and that he had seen this year a patient from Persepolis (south-west Persia) also suffering from Malta or undulant fever. The disease had been reported from Central Asia and its discovery in Persia was to have been expected.

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[1] Alymoff, A. J., and Balayan, A. B.: Arch. f. Schiffs.- u. Trop.-Hyg., October, 1933, p. 451.

MEAT INSPECTION IN SCOTLAND

Those who have to understand and administer meat regulations in Scotland will appreciate the issue by Dr. Gerald Leighton of a little book on the subject.[1] It gives an adequate explanation of the regulations, lays down a systematic method and procedure for routine inspection, and sets out the regulations and standards whereby meat shall be judged in Scotland. The definitions, explanations o the reasons for the various regulations, and the relative importance of the different sections are well described. Though the legal position in England is not the same or so satisfactory, a good deal of the matter will be of interest to English meat inspectors. A valuable section is devoted to adequate record keeping. The book is issued with the approval and consent of the Department of Health for Scotland.

NEW PREPARATIONS

Pymosel and Pymosel Tænia.—These are preparations for the destruction of intestinal worms, the formula for which is the result of researches made by a group of French authorities. The active principles of pyrethrum were made the subject of investigation by Dr. J. Chevalier and Mr. F. Mercier some ten years ago, and the results were published in a Compte Rendu of the Académie des Sciences in 1923. Preparation of the pyrethrines followed upon this work, standardisation and dosage being arrived at by Prof. E. Perrot with collaborators, whose reports were communicated to the Académie de Médecine in 1931 and the Société de Thérapeutique at the same time, and later in this year. Clinical experience followed in various hospitals in Paris, reports of which have appeared in French medical literature. Two preparations are now placed on the market—pymosel for the destruction of intestinal worms and parasites, and pymosel tænia to be used for the expulsion of tape-worms. The former is supplied in granules, and the latter in tablets, a higher dosage being required. The drugs come from the firm of S. A. Vermenes, Paris, the English distributors being Messrs. Harwood (Chemists), Ltd., Watford, Herts.

Saridone (Hoffmann-La Roche Chemical Works Ltd., 51, Bowes-road, London, N.13).—This preparation is issued in the form of grs. 5 oral tablets, each of which contains phenyldimethylisopropyl pyrazolon grs. 1¾, phenacetin grs. 2⅛, caffeine gr. ⅜, and starch gr. ¾. This combination of phenacetin and caffeine with a new antipyrin derivative has been found to act quickly as an analgesic with no harmful accompaniments, while its prudent dosage is suggested on the metal tube containers.

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[1] Pocket Handbook of Meat Inspection. A Guide to the Public Health (Meat) Regulations (Scotland), 1932. Second edition. By Gerald Leighton, O.B.E., M.D., F.R.S.E., Medical Officer (Foods) Department of Health for Scotland. Edinburgh and London: William Hodge and Co. 1933. Pp. 137. 6*s.*

Prince of Wales' General Hospital.—The annual dinner of the reunion association of this hospital will be held at the Trocadero Restaurant, London, W., on Thursday, Nov. 23rd, at 7.45 for 8 P.M., with Mr. William Ibbotson in the chair. The hon. secretary is Dr. Bertram H. Jones, 47, Queen Anne-street, W.1.

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THE EGYPTIAN GOD, SET, IN EARLY TIMES A BENEFICENT BEING, BUT LATER A CREATOR AND DISSEMINATOR OF EVIL AND DISEASE.—Venerated in early dynastic times, Set had come, by about 1700 B.C., to be looked upon as an unmitigated power for evil, associated with darkness and ill-health; henceforth, he was worshipped only out of fear. His evil reputation came from the facts that he was the murderer of Osiris, the deadly enemy of Horus, who was the personification of good, and that he was lord of the night as Horus was lord of the day. The colour red was associated with Set and became of ill-omen in consequence. The "unlucky" days of the calendar were written in red, red-haired men were persecuted as being devoted to him, while animals with red or reddish-brown hair were looked at askance for the same reason. Set is represented in the figure here reproduced with the head of an indeterminate creature generally styled the "Set animal."

Date: c. 1700 B.C.

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ADDRESSES AND ORIGINAL ARTICLES

NUTRITION AND CHILD-BEARING*

By Edward Mellanby, M.D. Camb., F.R.C.P. Lond., F.R.S.

PROFESSOR OF PHARMACOLOGY, UNIVERSITY OF SHEFFIELD; PHYSICIAN, ROYAL INFIRMARY, SHEFFIELD

In recent years the subject of child-bearing has become of greater public interest. There are several reasons for this increased interest, but the one which concerns us to-day is the mortality-rate and the high incidence of disease in mothers and infants incurred by this natural process. Four or five women die in each thousand births and, in spite of the great advance in medical knowledge in recent times, this figure becomes no smaller. For each woman who dies in or as the result of childbirth, a large number are seriously ill, suffering from all the well-known ailments of pregnancy and childbirth which need not be enumerated here. In addition to specific forms of illness, the general health of the average pregnant woman is so poor that it has become a general presumption that she is an invalid at such times. Now if all women in pregnancy were ill, we would have to accept the situation without further cavil. Some women, however, even in this country, carry out their ordinary work during pregnancy and never have a moment's illness throughout the period. Indeed in a few cases women are known to say that they are never so well as when pregnant. This surely ought to be the normal course, and even morning sickness, which is so common in pregnancy, should be regarded as an abnormality. It is our duty as medical men and scientists to find the cause of this undesirable state of affairs.

Nor does this problem affect only the mother. The death-rate of infants in the first week of life is about 23·5 per thousand live births, while this figure is increased to about 33 per thousand if the first month of life be substituted for the first week. If stillbirth and death in the first two weeks are combined, the mortality-rate may be as much as 80 per thousand live births. It is disconcerting to find that this figure also has not been reduced in recent years to anything like the extent of the mortality-rates of older infants. There is, in fact, reason to believe that the maternal mortality and neonatal death-rates are associated, especially as they both show this stubborn resistance to yield to greater knowledge.

These high mortality-rates and the large amount of sickness and disability associated with child-bearing could, I believe, be substantially reduced by proper nutrition, and it is my task to-day to afford some evidence for this belief. I admit at once that direct and accurate knowledge of this subject in human beings is meagre because, in its modern aspect, nutrition in relation to child-bearing has been little investigated. If, however, working from known and established facts, I can show you how serious are the results of specific dietetic defects in pregnancy, both for mother and child, you will probably agree that, when knowledge is more complete, this aspect of the problem will prove to be much more important even than appears at the present time. So that, however much stress I lay on the nutritional side, and however dire the consequences of the defective feeding which I describe, you may be sure that future research will only expand and emphasise the relation between nutrition and the physiological processes of child-bearing.

So obvious is the truth of these statements that it has long been a great puzzle to me why so little thought and work has been given to this aspect of life and health. The attention of the medical man has been so fixed on the actual mechanical process of childbirth and on the treatment of the illnesses associated with pregnancy as they arise, that he seems to have forgotten that underlying all these is the general problem of the relation of the nutrition of the mother to the normal functioning of her organs. Even in antenatal clinics it is the size and shape of the pelvis, the lie of the child in utero, the blood pressure, and the condition of the urine about which most interest is centred. Twenty years ago this attitude could be easily understood, but recently we have learnt much about the serious consequences of a deficiency in many essential food substances, and with pregnancy superadded, these consequences must be greatly magnified. In parturition itself all attention has been focused on sepsis. Far be it from me to decry this care, but it might be well to remember that the soil is often as important as the seed and that if there is any evidence which suggests that by nutritional means the resistance of the mother to infection can be raised, such a course ought to be adopted. Good feeding, in the modern sense of the word, can only be beneficial, probably even as regards resistance to infection.

The General Problem

Let us first see why nutrition must be of special importance in pregnancy. We know that (1) pregnancy involves the development and growth of the fœtus, placenta, membranes, and fluids which at birth may form about 16 per cent. of the maternal weight: the chemical substances used for building tissues must come from the mother, either from her own stores or indirectly from the food she eats; (2) that many chemical substances essential to proper structure, function, and even to life are in some cases only present in small quantities in the maternal organs and that they cannot be synthesised by either the mother or fœtus, so that unless a sufficiency of these substances (or their effective precursors) are taken in the food, both mother and offspring must go short and suffer in consequence. In Table I. the composition, in terms of some of the elements, of the average baby at birth as found by Hoffström[1] is seen. These figures give a quantitative idea of some of the nutritional factors which the maternal organism must supply, either directly or indirectly, to the developing fœtus.

Table I.—*Composition at Birth* (*in grammes*)

—	Weight.	Ash.	N.	S.	P.	Ca.	Mg.
Child	4180	113	83	0·9	18	30	1·0
Placenta	735	4	17	0·03	0·1	0·2	0·02
Umbilical cord and membrane ..	81	0·2	2·0	0·2	0·03	0·04	0·01
Amniotic fluid ..	2000	21	0·7	0·04	0·6	—	—
Placental blood ..	100	0·9	3·6	0·01	0·01	0·01	0·01
Total	7100	138·0	106·0	1·2	19·0	31·0	1·0

Total protein in baby at birth = about 550 grammes.

The actual mechanism whereby the fœtus claims and obtains nourishment for development, like all other fundamental problems of life, is unknown. It is of interest, however, to realise that the source of nourishment supplied to the fœtus is in itself a most interesting and complicated problem. It might be thought that so long as there were sufficient food elements in the blood stream it would not matter whether the fœtus grew at the expense of the tissues and stores of the mother or at the expense of the food she ate. This does not seem to be the case, at least in lower animals and most probably in man. At the end of the first half of pregnancy the fœtus and its attachments are negligible in weight as compared with that of the mother. During the second half the growth of the fœtus is rapid and is by no means negligible in terms of comparative weight at full term.

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* The Lloyd-Roberts lecture delivered at St. Mary's Hospital, Manchester, Oct. 24th, 1933.

TABLE II.—*Growth of Human Fœtus showing (in grammes) the rate of added elements in pregnancy*
("Science of Nutrition."—Lusk)

C.O. = Content of ovum ; A.W. = Added per week.

Week of pregnancy.	Nitrogen.		Phosphorus.		Calcium.		Magnesium.	
	C.O.	A.W.	C.O.	A.W.	C.O.	A.W.	C.O.	A.W.
16th ..	4·3	1·1	0·7	0·2	0·4	0·4	0·03	0·02
20th ..	8·8	..	1·5	..	2·0	..	0·09	..
21st ..	..	1·8	..	0·2	..	0·4	..	0·02
28th ..	23·3	..	3·6	..	5·4	..	0·23	..
29th ..	..	6·9	..	1·3	..	2·1	..	0·06
40th ..	105·8	6·9	18·9	1·3	30·5	2·1	1·004	0·06

The rapid growth of the fœtus and the corresponding greater demands on nutritional factors in the second half of pregnancy is shown in Table II.[2] It might appear, therefore, at first sight, that the mother would find it easy to nourish the fœtus in the first half of pregnancy and difficult later. This is not the case. Actually, as regards nitrogen, the maternal organism is often in a state of negative balance in the early months; that is to say, she really loses a good deal of her own protein whereas, on the same diet, she usually retains nitrogen in the second half of pregnancy. The probable interpretation of this is that the early fœtal growth not only takes place at the expense of the maternal tissues but causes an extravagant breaking down of these to enable it to get its requirements, in the form possibly of some specific amino-acids or other organic complexes. At a later stage the fœtus grows more at the expense of the maternal food. Whether this early sacrifice of the tissues of the mother can be reduced by better feeding in the sense of more complete dietary is not known. If, however, this mechanism involving the lavish breakdown of maternal tissues, which seems necessary for the initiation and early development of the young fœtus, is related in any way to morning sickness—such a prominent feature of this period—it may be possible to reduce or eliminate this symptom by correct nutritional conditions.

It seems unprofitable to spend much time on the large question of nutrition, in so far as it concerns the energy-bearing factors of food—the proteins, fats, and carbohydrates—in relation to pregnancy. Modern research and in particular a knowledge of the dietetic habits of different races show that the ordinary diet can vary widely in these elements and yet remain compatible with good maternal health and satisfactory development of the offspring. Indeed, surprise is often expressed at the good development and health of babies born of mothers whose diet has been well below the normal in caloric and protein intake. This must involve a greater sacrifice of maternal tissues to the developing embryo.

A Balanced Dietary

It is generally held that excessive feeding in pregnancy does more harm both to the mother and offspring than underfeeding. Particular suspicion is attached to the possible effects of high protein intake and especially of meat in the development of eclampsia. Whatever truth there is in the idea, it cannot represent the whole truth, for otherwise all Eskimo women, whose relative protein intake is very high, would develop eclampsia in pregnancy. It is more probable that a high protein diet calls for a larger intake of some other dietary factor, just as we know that a high cereal diet calls for increased consumption of protective foods such as milk and green vegetables to prevent damage. No nutritional phenomenon is more firmly established by recent research than the fact that some foods,[3] and especially cereals, are harmful in certain ways and that they can be rendered innocuous and their good nutritional qualities retained by a balanced consumption of protective foods. Unbalanced dietary, perhaps with a high meat consumption and certainly with a high bread and other cereal consumption, is one of the fundamental nutritional causes of trouble in pregnancy.

It is certain that the significance of correct nutrition in child-bearing does not begin in pregnancy itself or even in the adult female before pregnancy. It looms large as soon as a female child is born and indeed in its intra-uterine life. The presence of a contracted and misshapen pelvis due to rickets is the result of malnutrition in early life. It is unnecessary to emphasise the sequelæ of pregnancy in women with pelvic defects. Where it is especially common, as in Glasgow, the troubles of child-bearing and the maternal and neonatal mortality increase greatly. We know so well to-day how to prevent rickets that it ought to be regarded as a crime if it is allowed to develop in any child. A mixed diet including a pint and a half of milk for a child under two, and at least a pint subsequently, together with a dessert or tablespoonful of cod-liver oil given daily, winter and summer, ought to prevent rickets and thus exclude this particular difficulty of pregnancy. It may be said that, even if rickets develops in a girl and produces great deformity of the legs, continuous antirachitic dietary may cure the disease and correct the deformity. This is certainly true, but, so far as I know, it has never been proved that the pelvic size and shape as well as the legs recover. The point requires investigation. It is probable that pelvic deformities are not corrected so easily as the leg deformities, for I believe it is not unusual for gynæcologists to find an obviously rachitic pelvis without the legs showing much rachitic defect. In any case, the complete prevention of rickets is desirable and possible, and its elimination would greatly reduce the amount of surgical interference in childbirth and the undesirable sequelæ which follow. There is no reason why every woman should not undertake the function of child-bearing without any rachitic stigmata affecting the pelvis. But rickets in the female child and the resulting contracted pelvis of the future mother must be considered a stage further back; rickets may even develop, in rare instances, in utero as shown by Maxwell,[4] but what is more significant is that defective feeding of the maternal organism tends to increase the liability of the offspring after birth to this disease. This fact I showed in dogs by feeding comparable bitches during pregnancy on a rickets-producing and good diet respectively, and subsequently following up the bone changes in the offspring after birth on giving a rickets-producing diet.[5]

These two more remote effects relating to defective alcification show :—

(1) The necessity of the correct feeding of female nfants to prevent the development of contracted and misshapen pelves of the adult.

(2) The necessity of feeding women during pregnancy in such a way that their offspring after birth do not have either osteoporosis or an increased endency to rickets.

Calcium-Phosphorus Metabolism

The problem of rickets clearly involves the whole question of calcification and calcium-phosphorus metabolism and I shall, therefore, consider the matter in more detail. The retention of calcium and phosphorus in the body does not only depend on giving sufficient of these substances in the food. Some of he known facts bearing on this point include :

(1) The calcium and phosphorus intake must be sufficient in quantity and, within certain limits, which vary under different conditions, ought to be balanced.

(2) The retention of these substances in the body is greatly influenced by the presence or absence of vitamin D. Thus, with an adequate intake of this vitamin available, a comparatively small amount of calcium and phosphorus or a greater abnormality than usual in the ratio of these elements can often be overcome with the production of well-calcified bones and teeth. Obviously, there are limits to which the calcium and phosphorus intake can be reduced. The amount of these elements in the food may be too low to allow perfect formation of bones and teeth even if they are completely retained. Similarly, a great excess of vitamin D may drive out calcium and phosphorus from the bones and deposit them in the arteries, especially those of the kidneys.

(3) Calcium and phosphorus of different foods are retained by the body to different extents. For instance, in milk they are in a more suitable form for retention than in cereals. In fact, the calcium and phosphorus of cereals are often not only not retained but these foodstuffs seem even to prevent the retention of these elements in other foods. Cereals, especially cereals rich in calcium and phosphorus, such as oatmeal and cereal embryo, are anticalcifying and rickets-producing, whereas milk has a calcifying and antirachitic action. The greater the bulk of cereals eaten the greater must be the amount of calcium and calcium-retaining factors, e.g., milk, including vitamin D, ingested to balance their detrimental effect.

Let us now see the import of these facts. The average new-born baby contains about 30 g. of calcium and about 19 g. of phosphorus. Between the 28th week of pregnancy and full term—i.e., the 40th week—the fœtal retention of calcium is 25 g. and of phosphorus 15–16 g. These are very large quantities when it is remembered that the average normal adult is in calcium and phosphorus equilibrium when the intake is approximately 0·7 g. Ca and 1 g. P daily. The quantity necessary varies greatly according to other conditions as mentioned above, but less than a gramme of calcium and rather over a gramme of phosphorus represent a fair daily intake of these elements. There is abundant evidence, however, that an intake of 0·7 g. of calcium is never reached by many people. For instance, a diet of bread, margarine, lard, jam, rice, meat, fish, tea, and sugar is very low in calcium content, and yet these are the staple articles of diet and form the bulk of the food of the poor. Imagine a pregnant woman on such a diet, and this must often be the case, and yet over the last 12 weeks of pregnancy she has to supply 25 g. of calcium to the fœtus and after its birth continue this process for months on end—for at least a pint of human milk is given daily to a suckling infant and this contains about 1·3 g. of calcium. A special investigation on this point was made by K. U. and G. Toverud [6] on 16 women. Towards the end of pregnancy they found all were in a negative calcium balance and 11 in negative phosphorus balance. The negative balances could be made positive by increasing the calcium intake 1·6 g. and the phosphorus 1·8 g. daily or in some cases by increasing the vitamin D by giving cod-liver oil or egg-yolk.

It will be evident from these figures that the pregnant and lactating woman often has to supply calcium to the fœtus and milk from her own stores, i.e., from her bones. To what extent she suffers thereby we have no accurate knowledge under ordinary conditions. It is, of course, widely accepted that pregnancy means increase in carious teeth (" a tooth for a child ") and this may well be related to deprivation of calcium, since it has been shown in children that increased retention of calcium by giving a high milk and high vitamin D intake inhibits dental caries (M. Mellanby [7]). The other clear evidence of the effect on pregnancy, so far as calcium metabolism is concerned, of a low calcium diet is rare in this country but common in some eastern countries, especially India and China. I refer to the disease osteomalacia. In these countries the diet is often largely composed of cereals, and with each succeeding pregnancy the denudation of the bone reserves is increased until the woman is often dreadfully deformed. Osteomalacia is now definitely established as equivalent to rickets in the adult, and can be cured by giving milk or some other source of calcium together with cod-liver oil or vitamin D. Although florid osteomalacia is not often seen in England, it would be a great mistake to assume that the average pregnant woman in this country escapes all the consequences of this dietetic defect. It is probable that many women suffer some osteoporotic change owing to pregnancy, and Maxwell says that if more careful examination were made, incipient osteomalacia would more often be found in such women.

Recently Theobald [8] has claimed that many of the symptoms of toxæmias of pregnancy disappear in pregnant women when calcium gluconate and vitamin D are injected. He described great improvement by this therapy in pregnant women suffering from excessive salivation, cramps, vomiting of pregnancy, œdema, dermatitis herpetiformis, chorea, and raised blood pressure. Whether this treatment is as effective as stated by Theobald must remain for further confirmation, as must also the problem as to whether its implication that these conditions can be prevented by an adequate supply of calcium and vitamin D throughout pregnancy. It seems to me clear, however, that, correct in detail or not, this worker is probably on the right track in suggesting a dietetic origin of these distressing and common illnesses of pregnancy. The reason, however, why I doubt whether abnormal calcium metabolism is the primary basis of toxæmias of pregnancy is that in incipient osteomalacia these are not prominent features. So far as I know, early osteomalacia is characterised by twitchings of the muscles, restlessness, and sleeplessness, difficulty in walking, with a characteristic gait and nausea, pain over back and thighs. Except for nausea and possibly sleeplessness, there is but little in common between early osteomalacia, which is certainly a calcium-deficiency disease, and the toxæmias of pregnancy. Great activity of the fœtus in utero is also an interesting incident in osteomalacia. This subsides when the diet is adjusted as regards calcium and vitamin D.

I have referred to the baneful effects of imperfect calcium metabolism due to malnutrition of pregnancy in draining the calcium supplies and so tending to induce osteoporosis in the mother and rickets in the child, but I cannot leave this subject without referring to the teeth. It is unnecessary to dwell on the deplorable state of the teeth in this country. Is it not time, now we know a great deal about preventing this disease, that we took some steps to act up to this knowledge? The first necessity is to produce perfectly formed teeth and jaws and, since calcification of the milk teeth is well advanced in utero, the feeding of the mother during pregnancy and lactation on a diet of high calcifying qualities is essential (M. Mellanby [8a]). The sooner this mechanism for perfect tooth calcification is set going the better it will withstand the handicaps of postnatal feeding. The maternal diet should contain much milk, egg-yolk, and vegetables, and the intake of cereals should be reduced. Such a diet will help the mother to preserve her own teeth from decay and will help to ensure perfectly formed milk teeth in the baby. At birth, calcification of the permanent first molar begins and other permanent teeth are then formed in the jaws in a procession which does not cease till growth stops about the eighteenth year. Complete breast-feeding with a well-fed mother up to the end of nine months of extra-uterine life followed by a diet containing 1½ pints to 2 pints of cow's milk for the first three or four years and longer, if possible, and not less than a pint daily after this, will do more to eliminate the need of dentistry than all the dental hygiene—tooth-brushes, tooth-pastes, and mouth-washes—in the world. The addition of cod-liver oil—2 to 4 drachms daily—ensures a good supply of vitamin D, and while it is of great benefit when given to the mother during pregnancy, it is essential to the baby after birth. Cod-liver oil is rich also in vitamin A and will prevent those hyperplastic changes of the gum epithelium which ultimately result in pyorrhœa alveolaris (M. Mellanby [9]). Its content of iodine, to be referred to later, will prevent hyperplastic changes in the thyroid and so tend to eliminate simple goitre. Indeed, cod-liver oil is probably the greatest single nutritional factor, next to milk, in preventive medicine that the human race has ever possessed. Recently a well-known veterinary surgeon said that in the past 20 years the most important cause of the improvement of dog breeding has been the introduction of cod-liver oil into the diet. Why should veterinary surgeons and dog breeders have a greater appreciation of this wonderful remedy than those of us who are primarily interested in human beings?

Iron and Other Hæmatinic Principles in Food

Chlorosis, so widespread among women of this country at one time, has practically disappeared during the past 20 years; it might, therefore, be thought that the problem of anæmia and iron metabolism had solved itself. That this is incorrect is shown by the recent investigations of Mackay and Goodfellow,[10] and those of Parsons and his collaborators,[11] on infants. It is probable also that anæmia in pregnancy has a high incidence; it certainly has in India where it is a big problem, as we know from the investigation of Wills.[12] It is probable that anæmia in pregnancy is more common in this country than is generally recognised. Mackay and Goodfellow found that 45 per cent. of breast-fed and 51 per cent. of artificially fed babies under 12 months of age in certain London clinics were anæmic. There is reason for indicting maternal nutrition during pregnancy as the cause of nutritional anæmia in infants, although clear experimental proof of this is not established. The well-known facts are: (1) that a milk diet, whether of human or cow's milk, is so deficient in iron that it produces anæmia if no other source of iron is given; (2) that a fœtus has a natural tendency to store iron in its liver to tide it over the milk diet period and prevent too large a fall in its hæmoglobin content during lactation. It was shown by Zaleski [13] that the liver of puppies just after birth contained, in 100 g. of dried liver, 391 mg. of iron as compared with 78 and 43 mg. in the same weight of liver of adult dogs. In the human fœtus Hugouneng [14] found that two-thirds of the iron present in the liver at birth was deposited during the last three months of intra-uterine life. There is clearly, then, a large drain made by the fœtus on the iron stores and food-supply of the mother during pregnancy. It is natural therefore to assume that a failure to supply a mother at the time with sufficient iron must result in a failure on the part of the fœtus to store sufficient to supply the requisite quantity for the milk-feeding period. Clearly also a premature baby is especially liable to be short of iron stores.

This, however, is only a part of the story, for modern research on anæmia has demonstrated that hæmoglobin production is closely wrapped up with red blood corpuscle formation from normoblasts, and these in turn from megaloblasts. At each stage some specific nutritional factor is necessary, and a deficiency of an essential factor causes a breakdown of the mechanism and a development of some type of anæmia.

We know, for instance, that copper plays an important part in these operations (Hart et al [15]). Copper, like iron, is stored in the liver and is higher in concentration in young animals at birth than in the adult. The presence of copper seems to aid maturation of the normoblast to the erythrocyte.

Again, the work of Wills and Mehta [16] shows that a supply of iron is not sufficient to prevent or to cure the macrocytic anæmia associated with pregnancy which is commonly seen in India. For the alleviation of this form of anæmia the liver-active principle, or its equivalent in desiccated pig's stomach, or some constituent of autolysed yeast, curative of pernicious anæmia, is necessary. As is well known these substances control the conversion of megaloblasts to normoblasts.

It is certain therefore that anæmia, both in pregnant women and in infants after birth, is the result of some fault in a complicated mechanism, and that in order to prevent it we must make use of all our present knowledge by including in the maternal diet a sufficiency of each known factor necessary for hæmoglobin and red cell formation. Thus, in addition to supplying the mother daily with foods rich in iron, such as meat, egg-yolk, and green vegetables, calf's liver, which supplies both the hæmopoietic principle and some copper, ought to be given occasionally, say once weekly, during pregnancy and especially during the last few months of pregnancy. If a woman has achlorhydria mammalian liver ought to be given still more frequently in pregnancy.

Although simple anæmia of infancy is readily cured by iron therapy, as for instance by giving iron and ammonium citrate, it ought to be possible, by proper feeding of the mother, to avoid the necessity of this unnatural treatment. Mackay [10] has pointed out that this form of malnutrition in infants is of much greater importance than might be thought, for the morbidity figures of anæmic children, especially in regard to susceptibility to infection, are greater than in normal infants. To what extent pregnant women in this country suffer from anæmia I am unable to say, but it is probable that it is a serious disability at this period and may possibly be an additional factor in increasing the susceptibility of such women to puerperal sepsis.

Other Metals

Orent and McCollum[17] have made observations on the effect of deprivation of manganese in female rats. These workers showed that females on a manganese-free diet grow to maturity and produce the normal number of young. They are, however, indifferent to their offspring and give them neither care nor opportunity to suckle; as soon as a small amount of manganese is added to the basal diet they behave normally in this respect. It is an impressive thought that the absence of maternal affection may depend on a deficiency of a metal which in any case is only required in minute quantities (less than 0·005 per cent. of the diet). It may be added that one of the physical defects produced in the females by the manganese-free diet was poor development of the mammary glands, so that even if the young had had the chance to suckle they would not have grown properly. Whether these facts are of any practical interest in women is unknown, but their very existence illustrates in a striking way the importance and complexity of the problem of child-bearing and rearing. As a guidance to manganese distribution in foods, Orent and McCollum state that the manganese content of plant tissues ranges from 0·5 part per million to 10 parts per million and higher, and that of animal tissue from 0·1 to 5 parts per million.

Another metal which may prove to be of importance in the metabolism of pregnancy is magnesium. The magnesium balance in pregnant women has been investigated by Hoffström,[1] but there is nothing of great interest in these results. It is, however, important to remember that nephritic changes have been produced in rats by magnesium-free diets (Cramer[18]) and, although these results have not been extended to man, there is always a possibility that magnesium may be of some special significance in times of metabolic stress as in pregnancy.

Iodine and Thyroid Hyperplasia

Iodine is of importance both to mother and offspring. The normal thyroid gland of an adult woman contains about 8 mg. of iodine. There is some iodine in the blood (about 0·01 mg. per 100 c.cm.) chiefly in organic combination. It is probably safe to assume that the whole body of the average healthy adult contains about 10 to 15 mg. of the element, and that of a new-born baby about 0·15 to 0·3 mg. It would appear, therefore, that there is no difficulty under ordinary conditions for the fœtus to get a sufficiency of this substance. Although the transfer of iodine from mother to fœtus is, as far as we know, not a problem of any great practical importance in this country, it is in some countries. What I wish to emphasise here is the great significance of these traces of iodine in early life. Until recent years endemic cretinism has been very common in some of the Swiss cantons. With the addition of iodide to the salt in the proportion of 1 of KI in 100,000 of NaCl endemic cretinism in Switzerland has been greatly reduced. In fact, Hunziker and Eggenberger[19] claim that endemic cretinism never appears in the offspring of women who, during the last five months of pregnancy, have taken iodine to the extent of 0·1 mg. (100 γ) daily in the form of iodised salt.

The problem of simple goitre is largely one of an insufficient supply of iodine during pregnancy and early life, and the larger the thyroid overgrowth, the more likely is it that the iodine deficiency began in utero. I should like to give some of my own experimental evidence on this point. A diet consisting of milk, bread, and meat has a very low iodine content. If bitches are fed on such a diet during pregnancy and lactation under laboratory conditions the thyroids of the offspring on a similar diet become goitrous and of the hyperplastic type, devoid of colloid, and with a large blood-supply. The goitres of the puppies in the first litter may not be large, but if this diet is continued over subsequent pregnancies the maternal organism finds it more and more difficult to supply from her stores even the minute quantity necessary to produce normal development of the thyroid, and the goitre in the offspring becomes larger and larger. The following experiment illustrates this fact, but as it was carried out with additional objects than the one under review some of the data, as, for instance, the length of life of the puppies, are not comparable. In interpreting the data due allowance for this must be made.

The diet of a bitch throughout a period of four years was composed of separated milk, bread, meat, cabbage, and irradiated olive oil. This diet has a very low iodine content. During the four years 6 litters were born and the puppies were brought up on diets of similar, but not identical, constitution to that of the mother and were deficient in iodine. In Table III. the effect of this diet on the size of the thyroids of the offspring is shown. For guidance, it may be added that the average weight of the thyroid glands of normal dogs generally varies from 1 to 4 g.

TABLE III.—*The production of large goitres in young dogs by withholding iodine from the mother during pregnancy and early life*

Litter.	Size of puppies' thyroids at weaning.	Average weight in grammes of thyroids of offspring at death.	Age of offspring at death.	Puppies in litter.
1st	Large.	23	6 months.	4
2nd	Very large.	230	2½ years.	4
3rd	,, ,,	55	5 months.	3
The bitch was given five doses of 0·2 g. potassium iodide between the 3rd and 4th litters.				
4th	Small.	6	10 months.	5
5th	,,	7	1¼ years.	4
6th	,,	7	12 months (2) 2 still alive.	4

It will be seen how very large may be the goitres produced by this method of feeding and how effective the giving of iodine to the mother is in reducing the glands in subsequent litters. No doubt this natural store of iodine will be used up in subsequent pregnancies, with the production again of large goitres.

The commoner foodstuffs such as milk, meat, bread, and cabbage are far too deficient in iodine to protect the mother and the offspring from the consequences of iodine deficiency. It may be asked —what food will supply sufficient iodine to prevent these effects? The answer is, sea fish or any kind of living matter from the sea, including that popular remedy cod-liver oil. Sea fish ought to be included in the diet of all pregnant women—say twice a week —and with this inclusion and the giving of cod-liver oil to the child after birth, all danger of simple goitre will be avoided. Although the quantity of iodine in the body necessary to bring about perfect development and function of the thyroid is small and is measured in milligrammes, I would emphasise that the iodine content of most of the ordinary foods is also minute and is measured in a few thousandths of a milligramme. Sea fish is the only real exception. There is still in this country a great deal of simple goitre, and although iodine deficiency is probably not the only factor causing simple goitre, it is by far the most important, and a sufficiency of iodine intake especially during intra-uterine life and the period of growth would probably eliminate this condition from the community. I believe a sufficiency of iodine (i.e., about 100 γ or 0·1 mg. daily) taken during early life and the period of growth is the outstanding necessity in thyroid physiology.

A few more points relating to iodine in pregnancy may be briefly noted:

(1) Although great iodine deficiency in pregnancy results in endemic cretinism in the offspring, there is no evidence that the same deficiency is in any way responsible for sporadic cretinism—the type commonly seen in this country.

(2) Simple goitre may follow numerous pregnancies in a mother owing to the call of the fœtus on her own stores.

(3) Myxœdema sometimes follows numerous pregnancies in a mother and may be partially related to iodine deficiency, but this explanation is not established.

(4) A great exacerbation of hyperthyroidism is liable to occur during pregnancy in women with hyperthyroidism treated with iodine.

Fat-soluble Vitamins and Puerperal Sepsis

When young rats are brought up on a diet complete so far as is known except for vitamin A, they develop multiple septic foci and die. All kinds of infective lesions are found post mortem, but the most common are abscesses in the floor of the mouth, middle-ear disease and septic nasal sinuses, infections of the respiratory, genito-urinary, and alimentary tracts. The lesions begin in mucous membranes. When some substance containing vitamin A or carotene is given, these lesions are prevented or, if already present, are in most cases cured. Because of these experimental results Green and I called vitamin A the anti-infective vitamin.[20] It was natural to assume that the experimental results might have some bearing on infective conditions in human beings, and in order to test this hypothesis we made a large scale inquiry on pregnant women to see whether this form of prophylactic therapy would reduce puerperal sepsis (Green, Pindar, Davis, and Mellanby[21]).

In this test 550 women attending the antenatal clinics in Sheffield were investigated. Alternate women (275) were given a supply of a preparation rich in vitamins A and D during the last month of pregnancy; the remaining women had none of the vitamin supplement. No vitamin preparation was given to any of the women after their entry into the lying-in hospital. No general instructions as to dietary were issued in the antenatal period. At full term the women were brought into hospital and delivered, the attending doctors or staff having no knowledge as to previous therapy. After discharge from hospital, all the notes were collected and analysed. The results were as follows:—

In the vitamin group, the morbidity-rate in the puerperium, using the B.M.A. standard, was 1·1 per cent. In the control group the corresponding figure was 4·7 per cent. The difference, 3·6 per cent., is over twice the standard error (1·4) and therefore statistically significant.

At one hospital where over 400 of the cases were delivered the morbidity-rate in the vitamin-treated group was 1·0 per cent. as compared with 5·8 per cent. in the untreated group. These rates compare with 7·3, 8·1, and 5·0 per cent. in the total antenatal cases delivered in this hospital in the three years prior to the beginning of this investigation.

When the morbid cases were classified, not under the B.M.A. standard, but on the notifiable standard (Public Health Regulations), the difference in the morbidity-rates between the two groups was not so great, being 4·0 per cent. in the vitamin group and 5·5 per cent. in the controls. This means that later in the puerperium—i.e., after the first 10 days—possibly owing to the using up of the vitamin or other nutritional reserves (vitamin therapy stopped on admission), some of the vitamin group developed sepsis. However, even so, the difference between the severity of the disease in the two groups was very great; thus only 12 cases were classed as clinically severe in the vitamin group and 26 in the control group.

The general result of the investigation suggests that this form of therapy, in which probably the most important factor is vitamin A, increases the resistance of the genito-urinary tract to invasion by micro-organisms when given before birth; it seems probable that the resistance would be still greater if the vitamin were given over a longer period. These clinical tests were made because of the observation in animals that vitamin-A deficiency increases the susceptibility of mucous membranes to infection. In order to strengthen the experimental basis it may be well to describe some tests carried out by H. N. Green (unpublished) in my laboratory on this specific question of infection of the generative organs and its relation to nutrition.

Three groups of does (rats) were placed on a standard basal diet which is vitamin-A deficient (Green and Mellanby, 1928[20]). When pregnant, each rat was separated and maintained on the same diet until delivered; she was then returned to the communal cage. In group 1, only 5 out of 13 became pregnant and had litters which in each case were either born dead or were eaten soon after birth. All 13 does died of infection. In the 8 non-pregnant, infection was mainly localised in the lungs. In the 5 which bore litters the genito-urinary organs were infected and in 3 cases there was chronic infection of the uterus in the form of pyometra.

In group 2, it was decided to give a diet relatively, rather than completely, deficient in vitamin A, for it was thought that a greater percentage of pregnant animals with more families ought to be obtained than in the first group. Cabbage was given for one week in every three weeks over a period of 21 weeks and then the supplement was discontinued. Four of the seven does bore litters, but in only one case was there a second litter. All the does died of severe infection of some organs and 2 of the 4 after being pregnant died from chronic septic lesions of the generative organs.

In group 3, 2 g. of cabbage were given daily, in addition to the basal vitamin-A deficient diet to 9 does. In every case the rat became pregnant, more than one litter being born in most cases. Of these animals, on post-mortem examination, 8 were found to be free from infection of the generative organs, 1 showed slight infection, 3 of the 9 had other forms of slight infection. Two control does were given cabbage ad lib. in addition to the same basal diet and after having had and brought up several litters were found to be completely free from infection. Since litters can be successfully reared on this basal diet if adequate amounts of cabbage are given, it is probable that 2 g. of moist cabbage daily did not contain quite enough carotene to allow perfect health. The vitamin-A content of the livers of group 3 was found to be low. This feeding experiment shows the necessity for an increased vitamin-A intake during pregnancy, for in non-pregnant rats the amount (2 g.) of cabbage is sufficient for maintaining health.

These three groups of experiments show that the mucosa of a parous uterus is more susceptible to infection when the diet is relatively deficient in vitamin A or carotene during and after pregnancy and are in keeping with the clinical results in women above described.

The experimental and clinical results on the relation of vitamin A to infection are therefore sufficiently suggestive to warrant the belief that nutrition in pregnancy bears some relation to susceptibility to infection. Undoubtedly, however, there is a great deal more in this matter than the action of vitamin A. I find it difficult to believe, however, that puerperal sepsis will be solved on bacteriological lines alone. Rivett, Williams, Colebrook, and Fry[22] have recently made it clear that sepsis often follows normal and spontaneous delivery, without perineal or vaginal lacerations and where no vaginal examination has ever been made. It seems to me essential that a woman's resistance to infection should also be taken into consideration, and since there is at least some evidence that proper feeding raises this resistance, this side of the problem ought to be studied and developed.

Summary

I have attempted to show why nutrition is the most important of all environmental factors in child-bearing, whether the problem be considered from the point of view of the mother or that of the offspring. Both may suffer severely under conditions of malnutrition.

Malnutrition in this sense does not mean an insufficiency of energy-bearing foods, but a deficiency of factors, usually only necessary in small amounts, which are nevertheless essential both to mother and offspring. There are probably a much larger number of such substances than are at present known but, confining myself to the known, I have shown that among these must be placed calcium, phosphorus, iodine, iron, and vitamins A and D. All these substances are likely to be absolutely or relatively deficient in the diet, especially among the poor who cannot afford the dearer protective foods. A deficiency in any of them produces undesirable results on mother and child.

It is unfortunate that there is no established clinical or experimental evidence that malnutrition is responsible for those toxæmias of pregnancy which include albuminuria, pre-eclamptic toxæmia, and eclampsia itself. In spite of the absence of such evidence I wish to plead that future investigators of these problems will give some attention to this aspect of the case. The hypothesis that such toxæmias are due to the production of toxic substances by the fœtus and placenta has not been fruitful. On the other hand, there is every indication that they are due to abnormal metabolism and, since so many defects in metabolism are now known to be nutritional in origin, the chances that such a factor is the basis of eclamptic conditions are large.

The final teaching based on the foregoing facts is that proper nutrition is essential to healthy child-bearing and that the diet should include throughout pregnancy and lactation a sufficiency of what are known as protective foodstuffs. When plenty of these are taken, there is every reason to believe that the rest of the diet will take care of itself.

As a general guidance, the diet of pregnancy and lactation ought to include :—

2 pints of milk daily.
1 or 2 substantial servings of green vegetables—cabbage, spinach, or lettuce, daily.
1 or 2 eggs or egg-yolks daily.
An apple or orange or some fresh fruit daily.
Sea fish twice or more a week.
Calf's liver once a week.
If cod-liver oil can be taken, 2 teaspoonfuls daily is advisable.

The rest of the diet can be made up as the woman wishes.

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THE CLINICAL APPLICATIONS OF DINITRO-O-CRESOL

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I

THAT certain nitrophenols possess marked influence on metabolism has been known since 1885.[1] Little attention appears to have been paid to these first observations until the year 1928 when work was begun on this problem in Heymans's laboratory in Ghent.[2] From this date a series of publications has emanated from that laboratory indicating that certain nitrophenols are powerful stimulators of metabolism, causing a great increase in oxygen consumption, and, if the administration be pushed, a rise in temperature terminating in a fatal hyperpyrexia. Cutting, Mehrtens, and Tainter [3] described clinical experiments with 2:4-dinitrophenol. The compound was administered to patients in doses of 3 mg. per kg. body-weight, and it was found that there was a rise in basal metabolic rate unattended by toxic symptoms, and that it was possible by this means to reduce the weight of patients without simultaneous dietetic restrictions. In a preliminary communication Dodds and Pope [4] described another compound, 4:6-dinitro-o-cresol, indicating that this also possessed the power of increasing the basal metabolic rate but appeared from the pharmacological experiments to be more active than the 2:4-dinitrophenol.

The sole purpose of this communication is to establish a safe dosage for this compound in order that the basal metabolic rate may be maintained at a level above normal for long periods.

The substance was carefully purified and administered in the form of ordinary tablets coated with gelatin. It was previously found by animal experimentation that the substance exerts its effect when administered by mouth. The patients selected were either normal, healthy, young adults or young adults with varying degrees of obesity. The basal metabolic rate of the patients was observed frequently, employing the Benedict-Roth apparatus.

The first experiments were made employing 3 mg. per kg. body-weight per day. As can be seen from the charts, it was found that this dose was far too great, and it had to be discontinued after four days in view of the very severe toxic reaction. The second series of experiments was undertaken with a view to studying the effects of a single dose of 3 mg. per kg. body-weight. A third series of observations was made in an attempt to find the daily dose necessary to maintain the basal metabolic rate at a constant level between +30 and +50.

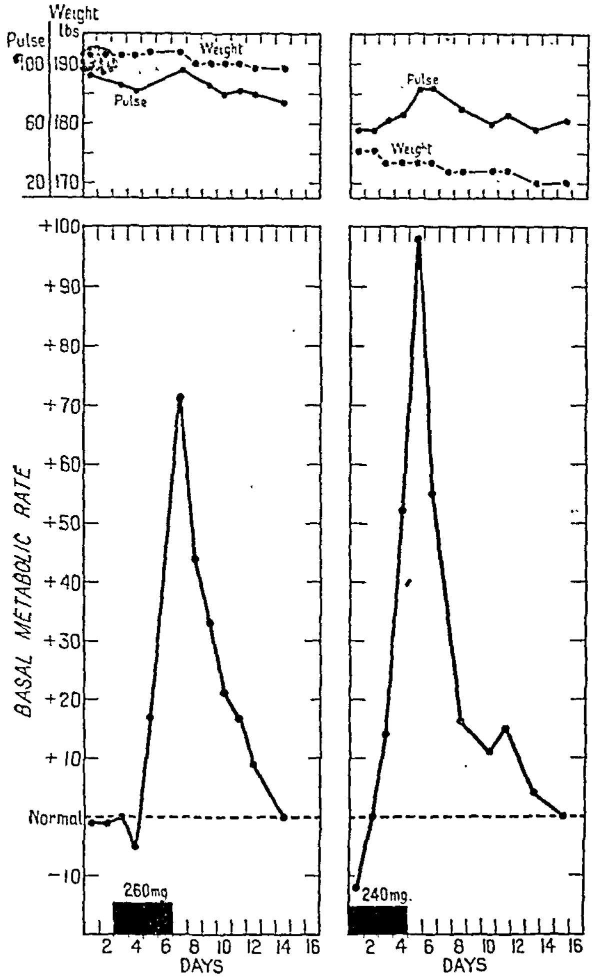

FIG. 1.—Charts showing the effect of dinitro-o-cresol on the basal metabolic rate, weight, and pulse-rate of two normal subjects. A dose of 3 mg. per kg. body-weight was given daily for several days.

Typical charts of two patients are reproduced. Fig. 1 shows the effect of administering the preparation, 3 mg. per kg. body-weight, over a period of a few days. In both cases by the third day the basal metabolic rate had reached an alarming height, in one instance showing nearly 100 per cent. increase. The administration of the preparation was stopped owing to the appearance of the toxic symptoms recounted later. The increase in basal metabolic rate was accompanied by a slight increase in the resting pulse-rate which, however, was not proportional to the height of metabolism. The temperature did not exceed 99° F., and there was no effect on the blood pressure. On withdrawal of the preparation the basal metabolic rate fell rapidly to normal. In Fig. 2 the effect of administering a single dose of 3 mg. per kg. body-weight is shown. There was a rapid rise in the metabolic rate, reaching a maximum within the first 24 hours, followed by a return to normal in four to five days. In Figs. 3 and 4 can be seen the effect of administering quantities of 50 to 100 mg. per day, or 0·5 to 1 mg. per kg. body-weight, over a prolonged period. It can be seen that the metabolic rate is maintained at a level above normal without the appearance of any symptoms whatsoever.

Toxic Symptoms.—It was found that when the basal metabolic rate exceeded +50 definite toxic symptoms appeared. These included sweating, lethargy with a desire to sleep during the day, and the impossibility of sleep during the night owing to sweating. This was accompanied by severe headache and loss of appetite, and in addition a definite pigmentation appeared on the conjunctivæ. This colour was of a greenish-yellow hue and was somewhat similar to, but not identical with, that of the early stages of jaundice. Careful examination of the blood and urine failed to reveal the presence of bile-pigments.

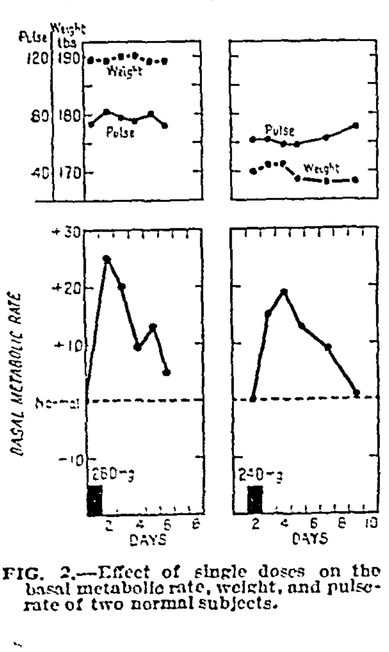

FIG. 2.—Effect of single doses on the basal metabolic rate, weight, and pulse-rate of two normal subjects.

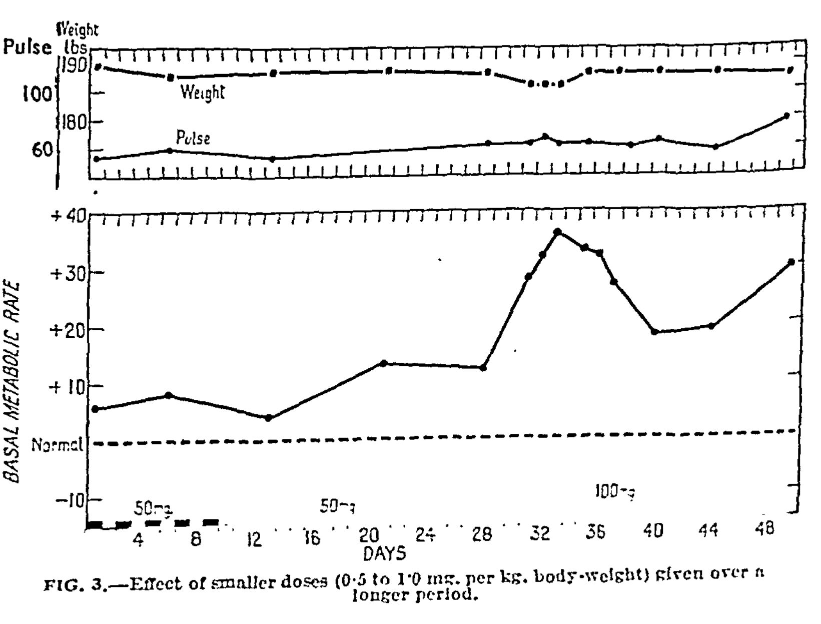

FIG. 3.—Effect of smaller doses (0·5 to 1·0 mg. per kg. body-weight) given over a longer period.

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SUMMARY OF LABORATORY FINDINGS

Date.	Hæmoglobin.	R.B.C. (millions).	W.B.C. (thousands).	Polymorphs (per cent.).	Lymphocytes (per cent.).	Mononuclears, &c. (per cent.).	Reticulocytes (per 1000).	Fragility saline (per cent.).	Van den Bergh.	Notes.
1930. July 1st..	56	4·7	6·2	71	23	6	..	0·55–0·40	..	B. film normal. Spleen + 3 months after first attack of jaundice—vague dyspepsia—X ray stomach and duodenum normal.
1932. June 2nd	62	4·0	1·4	67	20	13	..	..	..	Spleen enlarged to umbilicus. ? Banti. B. film normal.
„ 14th	..	..	..	..	..	..	..	0·50–0·20	Direct neg. Indirect doubtful pos.	Wassermann negative. No T.B. in fæces.
„ 18th	Attack of colicky abdominal pain.									Deeply jaundiced, cholæmic. No ascites.
„ 26th	Onset of jaundice. Bile noticed in urine.									
July 29th	75	4·2	2·8	59	37	4	34	..	Biphasic +	
Aug. 6th	..	4·2	..	..	..	..	4	..	..	
„ 11th	Splenectomy. Weight of spleen 2 lb. 2 oz. = 1020 grammes.									
„ 31st	..	..	14·3	79	14	7	..	..	..	—
Sept. 12th	72	4·4	10·2	66	20	14	..	0·65–0·25	Direct and indirect neg.	—
Oct. 16th	59	3·9	15·4	67	18	15	11	0·65–0·25	..	Some anisocytosis.
1933. April 5th	Price-Jones curve normal (Dr. W. C. Smallwood).									—
Oct. 3rd	78	3·8	9·6	63	27	10	15	0·55–0·25	Direct neg. Indirect pos.	—

it gave a strong positive biphasic reaction. The fragility of the red corpuscles was estimated again about a fortnight before the jaundice appeared, and the range was normal (0·50 per cent. to 0·20 per cent. saline). At no time was there any ascites, and physical examination was consistently negative, apart from the considerable enlargement of the spleen and the jaundice. The anæmia was never profound but on July 29th, 1932, examination of his blood showed a definite reticulocytosis (34 reticulocytes per 1000 red cells), for which there was no apparent cause (he had not received any form of liver treatment or any known stimulant to the bone-marrow). The reticulocytosis proved to be transitory; it had disappeared eight days later, and it was the only evidence to support the diagnosis of acholuric jaundice, but in view of the rapid deterioration of his general condition, for he now appeared to be fatally ill, it was decided to treat the patient surgically.

On August 11th, 1932, splenectomy was carried out by Mr. H. H. Sampson. The operation was difficult owing to adhesions and the gross enlargement of the spleen; after removal its weight was found to be 1020 g., but its size has been very considerably diminished by gentle pressure. Convalescence was good; the jaundice disappeared in the course of three weeks, and one month after the operation the van den Bergh was completely negative, both direct and indirect reactions. At this time it was found that the fragility of the red blood corpuscles had actually increased and now showed a range of 0·40 saline (from 0·65 to 0·25). There was slight secondary anæmia, but actually a leucocytosis was present (10,200 cells). The man appeared well and was discharged.

Dr. F. W. Mason Lamb, pathologist to the General Hospital, reported on the section from the spleen as follows: "The lymph follicles are diminished in size and number. Areas of hæmorrhage and of fibrosis are present. Most of the cells of the pulp have disappeared and the splenic sinuses are therefore much more prominent than usual. The endothelium lining the sinuses shows some tendency to proliferation and degeneration. The changes seen are those generally associated with acholuric jaundice."

Nearly three months after the operation he came to me in the out-patient department, apparently well; examination of his blood showed increased fragility of the red blood corpuscles of the same degree—range 0·40 saline (0·65 to 0·25), and a moderate anæmia.

In April, 1933, a Price-Jones curve (Dr. W. Carey Smallwood) was normal. In October, 1933, I saw the man again as an out-patient; his general condition was good, he had been working regularly and said he felt better than he had ever been prior to the operation. The blood count showed a slight anæmia; fragility was normal; the van den Bergh gave a negative direct and slightly positive indirect reaction. A summary of the laboratory findings is given in the accompanying Table.

DISCUSSION

Cases of acholuric jaundice may present great difficulties in diagnosis for, as Lord Dawson[1] has pointed out, jaundice may be inconspicuous or even absent and the only outstanding feature may be unexplained anæmia. In most cases, fortunately, there is evidence of increased fragility of the red blood corpuscles, which gives a clue to the diagnosis; it is well known however that this fragility may vary in degree not only in different patients but also at different times in the same case. In my patient there was no evidence of increased fragility in the two examinations carried out before the operation, and the second of these was done only a fortnight before the onset of acute illness.

Reticulocytosis of considerable degree is an important feature of many cases of acholuric jaundice, but in the case recorded it was found only once, on July 29th, 1932; it was slight in amount (3·4 per cent.) and had disappeared a week later; on this admittedly slender evidence the decision in favour of operation turned. The effect of splenectomy on fragility is variable; according to Dawson it remains unchanged in half the cases, and is reduced in the remainder. In his paper he mentions in a footnote one case, unpublished, in which it had been found that the fragility increased after operation. So far as I am aware, the history of my patient is the only one of this type to have been put on record. It is difficult to suggest a completely satisfactory explanation of the unusual course of this case; provisionally I accept the simplest as the most likely to be true.

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[1] Brit. Med. Jour., 1931, i., 963.

It seems to me that it is possible that when hæmolysis in the spleen is very active all fragile corpuscles may be removed as soon as they enter the blood stream from the bone-marrow, and that consequently the estimated fragility of the blood removed from a vein may remain normal. After splenectomy fragile corpuscles may circulate in the blood stream, as they will not be removed by the spleen and the general fragility of the red blood corpuscles in the peripheral circulation will therefore be increased. If this be the true explanation, I should have expected the anæmia to have been more profound in my case and I can only assume that the proportion of fragile corpuscles produced was not great.

DIPHTHERIA IN HULL

AND ITS RELATION TO BACTERIOLOGICAL TYPE

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Diphtheria in Hull has been particularly severe during the past three years. Graham Forbes [1] in his recent survey of diphtheria in England and Wales draws attention to this fact and shows that in 1931 and 1932 the city had an unusually high incidence and mortality compared with the county boroughs of the northern area. His figures for 1931 are as follows :—

	Incidence per 1000.	Deaths per 100,000.
All County Boroughs ..	1·54	9·8
Hull	3·6	30·8

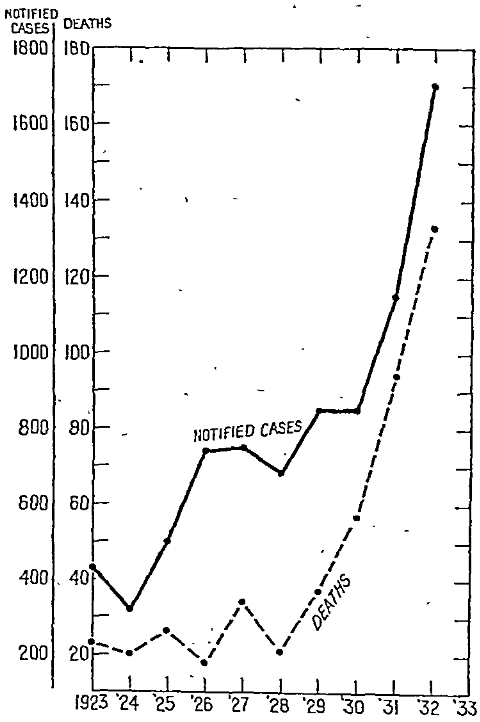
The incidence and mortality in Hull for the past ten years are shown in graphical form in the accompanying Figure, from which it appears that some unusual factor has been at work since about 1929. The figures on which the graph is based are as the following :—

Year.	Notifications.	Deaths	Year.	Notifications.	Deaths
1923 ..	421 ..	23	1928 ..	674 ..	21
1924 ..	321 ..	20	1929 ..	852 ..	37
1925 ..	498 ..	26	1930 ..	856 ..	47
1926 ..	742 ..	18	1931 ..	1145 ..	94
1927 ..	747 ..	34	1932 ..	1707 ..	133

Considering our cases during the past three years from the clinical standpoint, we formed the impression that certain of them were unusually severe. About October, 1930, our attention was drawn to some toxic cases where the general toxæmia was out of all relation to the throat lesion. Despite what appeared to be an adequate dose of antitoxin administered during a reasonably early stage, say on the second day, the disease progressed steadily, cervical adenitis became more marked, toxæmia increased, and death took place between the fourth and tenth day of the disease. An extreme example of such a case is the following :—

History.—The patient, a boy 9 years old, had previously been healthy, with no illnesses of importance. On May 28th he was active, ate well, and seemed normal in every way. On the 29th he got up and dressed, but did not feel well, and vomited. Swelling in the neck was noted, but he did not complain of his throat. On May 30th the child was worse, and the neck more swollen. A doctor was sent for, the case was notified, and the patient admitted to hospital at 4.30 P.M.

Condition on admission.—Child exceedingly ill. Moribund. Throat shows extensive recent membrane over tonsils and fauces, most marked on the left side where it stretches up almost to the hard palate. Patient was semiconscious, restless, and cyanosed; breath intensely fœtid and copious nasal discharge. Extreme enlargement left side of neck due to periadenitis. Pulse very weak. Died 9.30 P.M. This child was obviously dying of acute toxæmia and there were no indications for antitoxin or any other treatment.



Number of diphtheria cases and deaths notified in Hull during the years 1923–32.

Bacteriology.—Swabs from throat and nose were found positive. The organism was isolated in pure culture and found to be of the gravis type.

Such toxic cases, up till then rare and disturbing exceptions, increased in number during 1931, till in the winter 1931–32 they became relatively common. It was therefore thought desirable to investigate the cases to ascertain the relationship between the clinical type of disease and the types of diphtheria bacilli previously differentiated in Leeds.[2,3]

METHODS OF INVESTIGATION

It was decided to examine all cases which could be regarded as clinical diphtheria, omitting the obviously septic cases which were sent in as diphtheria, and also carriers. Cases of doubtful clinical diphtheria were regarded as material for the investigation and were only rejected if the cultures showed no diphtheria bacilli.

Swabs were taken by one of us in the morning and sent at once by train to Leeds, where they were investigated by the technique described by Anderson, Happold, McLeod, and Thomson.[2] In certain cases organisms were isolated from the parallel routine swabs and tested in the hospital laboratory for starch fermentation. These numbered 100, and with one exception the results obtained in the two laboratories were identical. This finding is discussed in detail later. Omitting the Leeds negative findings, which corresponded in almost every case with three successive negative findings on Löffler's serum medium in Hull, we were left with 310 cases of clinical and bacteriologically typed diphtheria of all grades of severity. These comprised practically all the established diphtheria cases admitted during November and December, 1932, and January and February, 1933, with the exception of a short interval at Christmas. The findings are therefore a thoroughly representative sample of Hull diphtheria as we have known it recently.

We classified our cases on admission as mild, moderate, or severe. By "mild" cases we mean those showing slight lesions on one or both tonsils without adenitis or toxæmia. Our antitoxin dosage for such cases ranges from 4000 to 8000 units. "Moderate" cases showed extensive membrane formation on one or both tonsils with perhaps slight adenitis but no marked toxæmia. The antitoxin dosage was in the neighbourhood of 16,000 units. "Severe" cases showed membrane formation involving fauces, soft palate, and uvula, with marked adenitis and toxæmia. Antitoxin dosage in this group of severe cases varied from 24,000 to 88,000 units, some portion of the dose always being given intravenously within an hour of admission. The average dose was approximately 40,000 units.

In a small group of some 15 toxic cases previously dealt with and not included in the series under discussion, we had given doses of serum varying from 100,000 to 180,000 units. The results were not appreciably different from those obtained with the smaller dosage mentioned.

In considering the results we have adhered to the classification on admission except that we have extracted the fatal cases, almost all of which were classified as "severe" on admission.

TABLE I.—*Clinical severity and type distribution of 310 cases*

—	Gravis.	Intermediate	Mitis.	Atypical.	Double infection*	Total.
Mild ..	56 (1)	20	14	3	1	94(1)
Moderate	58 (4)	41(1)	9(1	2	1	111(6)
Severe ..	31(15)	22(7)	2	2	—	57(22)
Fatal ..	35	5	1	—	—	41
Laryngeal	4	2	1	—	—	7
All cases	184(20)	90(8)	27(1)	7	2	310(29)

* These were infections with mitis and intermediate strains.

The numbers in parentheses indicate the number of cases in each group which showed typical diphtheritic paralyses.

TABLE II.—*Results from Table I. expressed in percentages. Faucial cases (303) only*

—	Gravis.	Intermediate.	Mitis.	Atypical.	Double infection.
Mild ..	59·6	21·2	15·0	3·2	1·0
Moderate ..	52·2	37·0	8·1	1·8	0·9
Severe ..	51·4	38·6	3·5	3·5	—
Fatal ..	85·4	12·2	2·4	—	—
All cases ..	59·4	29·0	8·7	2·3	0·6

TABLE III.—*Percentage incidence of paralysis and case-mortality in faucial cases*

—	Gravis.	Intermediate.	Mitis.
Paralysis incidence ..	11·1	9·1	3·8
Case-mortality rate ..	19·4	5·7	3·8

Table I. summarises our findings, while Tables II. and III. express them in percentage form. All the deaths, with the exception of the mitis death, were toxic deaths.

The death under the mitis heading was due to broncho-pneumonia; a typical attack of severe broncho-pneumonia complicating a case of faucial diphtheria of moderate severity in a child aged two years. It was not a toxic diphtheria death in the sense in which all the other fatal cases can be understood. In a case not included in our series, an organism of mitis type was isolated from the throat of a child aged five years who had been ill for several weeks with broncho-pneumonia and who died from that disease. The throat was somewhat ulcerated and he had been swabbed before admission. Despite the throat lesion we thought that the case was probably a carrier and the organism was found to be non-pathogenic to animals.

It will be seen from these figures that there is a high proportion of gravis infection in Hull, almost 60 per cent. of all cases showing the starch-fermenting strain of diphtheria bacillus. The next most important strain is the intermediate (29 per cent.), while mitis strains account for only 9 per cent. of the total infections.

The high percentage of gravis infection in cases classified as clinically mild is interesting. We would suggest that this indicates a partial immunity in the subjects attacked. We are of the opinion that clinical severity in diphtheria is probably more dependent on individual partial immunity than on other factors such as virulence and infective dose.

The number of toxic deaths (40) in this series of 303 faucial cases is large, and it is seen that 87 per cent. of these deaths were due to an organism of the gravis type.

Our experience in Hull is, therefore, that the great majority of fatal toxic cases are due to a starch-fermenting bacillus which differs from the gravis type found in Leeds only in minor points detailed later in this paper. It will be noted that this organism is also found in a considerable number of mild and moderate infections. It therefore follows that it is only possible to postulate a gravis infection from a consideration of the clinical symptoms in the more acute and toxic cases.

An interesting point has emerged as to the intermediate type of organism. Though described originally as "intermediate" on bacteriological grounds, it seems to be intermediate in clinical significance as far as Hull is concerned. Our 88 intermediate faucial cases show a 9·1 per cent. incidence of paralysis and a 5·7 per cent. case-mortality rate against 11·1 per cent. and 19·4 per cent. respectively for the gravis infection. The paralysis rates do not show such a marked contrast as the mortality-rates, but this is partly explained by the fact that the intermediate cases showed a proportionately greater number of survivors to exhibit paralysis.

It should be noted that in the groups we have classified as moderate and severe the relative proportion of intermediate infection is appreciably greater than in the two extremes of severity—the mild cases and the fatal toxic cases.

The incidence of mitis infection is low. These cases for the most part were mild and the solitary death was due to broncho-pneumonia. The numbers are too small for useful discussion.

From the clinical standpoint the striking feature is the toxic nature of the severe gravis cases. We have seen many cases which have died of toxæmia despite antitoxin dosage of 60,000 units or more, part of the dose being given intravenously on admission, and some of these cases were admitted on the second day of disease. It is not surprising that clinicians faced with these cases have doubted the efficacy of antitoxin and suggested that existing antitoxins do *not* neutralise gravis toxin; but the occurrence of large numbers of mild gravis cases, and the usual efficacy of measures taken to protect by active and passive immunity persons in contact with gravis infection, do not support this view.

Also the experimental work of Parish, Whatley, and O'Brien [4] and that of Povitzky, Eisner, and Jackson [5] is opposed to a theory formulating a different toxin. The last-named differ from the former in finding that when serum was administered late they could not control gravis infections in the guinea-pig as readily as they could infections with other diphtheria strains. The most probable explanation of these observations appears to be that the gravis strains invade the tissues more vigorously and that increased speed of absorption and fixation of toxin follow, a fatal dose being often absorbed within 48 hours and sometimes within 24 hours of onset. The remedy seems to be an increasing use of the methods of active immunity that are available.

ANIMAL PATHOGENICITY OF THE STRAINS ISOLATED

The technique followed was to suspend an 18-hour culture on Löffler's medium in 4 c.cm. of 0·85 per cent. saline, and to inject 0·5 c.cm. of this suspension (⅛th slope) to a rabbit intramuscularly (extensor muscles of thigh) and another 0·5 c.cm. to a guinea-pig subcutaneously in the anterior chest wall.

In all 67 strains were injected, including all the mitis and atypical strains. The results of these injections are given in Tables IV. and V., and indicate that the order of animal pathogenicity was gravis, atypical, intermediate, and mitis. This was suggested both by the number of pathogenic strains and by the evidence of power of persisting in the animal body as judged by percentage of recoveries from the site of injection at death.

TABLE IV

Type.	Strains injected.	Number failing to kill in dose used: (*a*) rabbit, (*b*) guinea-pig.		Percentage of weakly pathogenic strains.
		(*a*)	(*b*)	
Gravis ..	25	0	1	4·0
Atypical ..	8	1	1	12·5
Intermediate	12	1	3	25·0
Mitis ..	24	5	7	33·3

TABLE V.—*Percentages of animals from which strains could be obtained in cultures from site of infection at time of death*

Type.	Rabbit.		Guinea-pig.	
	Average interval in days till death.	Percentage of strains recovered.	Average interval in days till death.	Percentage in strains recovered.
Gravis ..	3·9	60	2·1	65
Atypical ..	6·8	71	3·5	43
Intermediate	5·1	63·5	3·8	22
Mitis ..	4·9	52·7	2·7	11·7

STABILITY OF TYPE

The types described as mitis and intermediate correspond exactly with those of which an account is given in the previous papers referring to diphtheria in Leeds.[2,3] The gravis type predominant in Hull differs from that most common in Leeds in two minor points: (*a*) it gives a finer, blacker, and less easily recognisable colony on the special tellurite medium recommended; (*b*) its growth in broth is associated with a less marked pellicle and more general turbidity. The "atypical" strains were with one exception strains closely resembling the typical Hull gravis strain except in failing to ferment starch and glycogen. The question of type stability was judged in three ways:—

(*a*) Investigation of the property of starch fermentation on strains isolated independently at Hull and at Leeds from the same cases. There was one discrepancy in a hundred, a case starch-negative at Hull and starch-positive in Leeds. Repetition of test at Leeds three weeks later gave starch-negative, glycogen-positive, and repetition again after four months gave starch-negative, glycogen-negative. This strain was therefore classified with the atypical forms; it resembled gravis in all other respects, but the property of polysaccharide fermentation was weak.

(*b*) All strains recovered from animals at death were re-examined. The results were as follows: Twenty gravis strains recovered, and 10 of these both from rabbit and guinea-pig—all 30 true to type. Ten mitis strains recovered and 2 of these both from rabbit and guinea-pig—all 12 true to type. Eight intermediate and 1 from both rabbit and guinea-pig—all 9 true to type. Six atypical and 2 from both rabbit and guinea-pig—of these 5 were recovered unchanged, 2 were lost before completion of identification, and 1 showed a partial fermentation of starch.

(*c*) Thirty strains were retested in respect of their cultural qualities after periods varying from 4–9 months in subculture. No change was recorded.

The general conclusion seems to be that there is a marked general stability of type, but that a few strains hold the property of polysaccharide fermentation very precariously. The acquisition of this property by a mitis strain has never been observed.

OCCURRENCE OF MIXED TYPES IN PRIMARY CULTURES

This was observed twice. A brother and sister falling ill about the same time were both found to have colonies of mitis and of intermediate types in their cultures. The strains isolated from these colonies have remained true to type in subculture and have shown a remarkable similarity in their animal pathogenicity—i.e., both mitis strains have killed rabbit and guinea-pig, whereas both intermediate strains have killed rabbit after a week and have produced local lesion in the guinea-pig without killing it.

CONCLUSIONS

(1) We have demonstrated a heavy incidence of gravis infection in Hull diphtheria. Of a series of 310 cases of all grades of severity, 59 per cent. have shown this strain of diphtheria bacillus. This heavy incidence, we suggest, is the explanation of the high diphtheria morbidity and mortality recently experienced in Hull.

(2) Of the 40 toxic deaths in this series, 35 were due to gravis and 5 to intermediate strains.

(3) The striking feature of these gravis infections in a completely non-immune subject is the extremely rapid course of the toxæmia. The short time-interval between infection and toxin-fixation defeats the ordinary methods of recognition and treatment. This emphasises the importance of prophylaxis as being the best method of dealing with diphtheria.

(4) In Hull the intermediate type is intermediate in clinical severity. It is found in toxic and fatal cases, but to a less extent than is the gravis strain. In this respect the findings in Hull differ from those obtained in Leeds and some other places where the case-mortality from intermediate infection is considerably higher.

(5) The mitis organism is at present of scanty distribution in Hull and is associated with mild and non-toxic cases.

We wish to thank Dr. K. E. Cooper of the University of Leeds bacteriological department for his assistance with the experimental work on animals. We wish also to express our thanks to the Medical Research Council for a grant from which the expenses of the investigation have been partly defrayed.

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A CASE OF THE SCHÖNLEIN-HENOCH SYNDROME

BY A. PINEY, M.D. BIRM., M.R.C.P. LOND.
ASSISTANT PHYSICIAN TO ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, PLAISTOW

THE whole subject of the purpuric diseases is still in confusion, partly as the result of including a most heterogeneous collection of morbid conditions under this name. Such a definite malady as thrombocytopenic purpura (Werlhof's disease) is now often recognised, but the less clearly classified diseases, such as the purpura rheumatica (Schönlein's disease), and purpura abdominalis (Henoch's disease) of older writers, are often forgotten. Every student learns that Henoch's purpura may be mistaken for an intussusception, and, as a rule, he also hears that Schönlein's disease is not related to rheumatism; it is, however, rare for him to know any more about these conditions, which are, therefore, often overlooked.

The case to be recorded here shows how peculiar the clinical features may be, and also demonstrates that the two maladies are intimately related to one another.

A boy, aged 7, was admitted to one of my beds, having been sent as a case of subacute rheumatism.

The *history* was that he had had a septic spot on the back of the right knee three weeks earlier. The knee became swollen, but improved with fomentations. A few days later the left knee was painful and swollen, and a week after the first swelling had occurred a "purpuric" rash was noticed. He was treated as a case of subacute rheumatism, and for ten days pains flitted from joint to joint, the rash still being present, although some spots faded whilst fresh ones appeared. Three days before admission the boy complained of sudden intense pain about the umbilicus, and vomited. Two days later the motions were seen to be streaked with blood and were very offensive.

On *admission* the striking feature was the peculiar "purpuric" rash, which was most intense on the dependent parts and on the back, particularly the buttocks. The individual spots varied in colour from purple to light brown; none were larger than a pea, but in places they were so close as to become confluent. The brownish spots were level with the skin surface, but the purple ones were slightly raised. On close inspection it was clear that each spot consisted of a minute reddish centre, surrounded by a slightly raised zone. It was striking that none of the colour changes characteristic of a bruise occurred during the fading of the eruption.

The heart was slightly enlarged and there was a blowing systolic bruit audible in all areas. The urine contained a faint trace of albumin, but no blood or casts.

Course of Illness.—Next day the spots were far more numerous, the scrotum, penis, ankles, and feet being specially affected. Two days later the child woke in the morning with intense œdema of the forehead and eyelids. The urine now contained a large number of red corpuscles and much albumin, but no casts. Within a few days the blood disappeared, but albuminuria persisted, although in decreasing amount, for over a fortnight. The œdema lasted for only five days.

At the time when the "purpuric" spots were most numerous the blood showed:—

Red corpuscles (per c.mm.)	4,150,000	Neutrophils (per cent.)— (band forms 3·7) (polymorphs 76·3)	=80
Leucocytes .. (per c.mm.)	26,100	Monocytes (per cent.)..	10
Hæmoglobin index	80	Lymphocytes (per cent.)	10

The Arneth count was not shifted to the left, and there were 265,000 platelets per c.mm.

It was clear that this was not a case of thrombocytopenic purpura (Werlhof's disease), and, indeed, quite apart from the normal number of platelets, the clinical characters of the eruption were very different from those of simple purpura.

On three successive days an intramuscular injection of 3 c.cm. of calcium gluconate was given and for four days no fresh spots appeared, but then a fresh crop came out. The treatment was repeated in a week and again there followed a period of four days without any fresh eruption. When the new crop of spots appeared an injection of horse serum was given, but it had no effect.

Another attack of severe abdominal pain, with blood in the motions, now occurred. The belly was tender just over the umbilicus, and for a few hours there was intense pain. The tenderness on pressure persisted for a week. Two drachms of calcium gluconate were given by mouth three times a day for a week, and during the same time parathyroid extract gr. $\frac{1}{10}$ was given each morning. No fresh spots appeared for a week, and the boy was, therefore, allowed to get up. A few fresh spots then appeared around the ankles, but after the first day there were no more new ones. Uninterrupted recovery now took place.

This case is recorded in order to show the diagnostic difficulties and to emphasise that this is a form of "purpura" entirely due to abnormal permeability of capillary walls. The urticarial characters of the rash strongly support Glanzmann's contention that Schönlein's and Henoch's disease should be classified together as "anaphylactoid purpura." The fact that the successful treatment was of the type that is applicable to allergic conditions also supports this view.

Further, the case shows clearly that the hæmorrhages that may occur in the Schönlein-Henoch syndrome are not due to simple bleeding, but to a true inflammatory lesion, such as nephritis or colitis.

CEREBRAL ANGIOGRAPHY

ITS APPLICATION IN CLINICAL PRACTICE AND PHYSIOLOGY

BY EGAS MONIZ
PROFESSOR OF NEUROLOGY, UNIVERSITY OF LISBON

CEREBRAL angiograms are obtained by means of a thorotrast injection of 10 to 16 c.cm. in the inferior part of the common carotid, between the two parts of the sterno-cleido-mastoideus. The arteriogram is a most important aid in the diagnosis of brain tumours. In order to obtain one it is necessary to produce a flash from the X ray tube a moment after the injection of 10 to 12 c.cm. of thorotrast.

If we continue to inject up to 16 c.cm., another radiogram at an interval of four seconds shows the veins and sinuses of the brain. This phlebogram is taken with the same injection, and consequently the patients suffer no further inconvenience.

The most important points in *arteriograms taken for* the purpose of localising brain tumours are: (1) The bends of the *internal carotid in the cranial cavity.* Anatomy treatises describe an anterior bend which

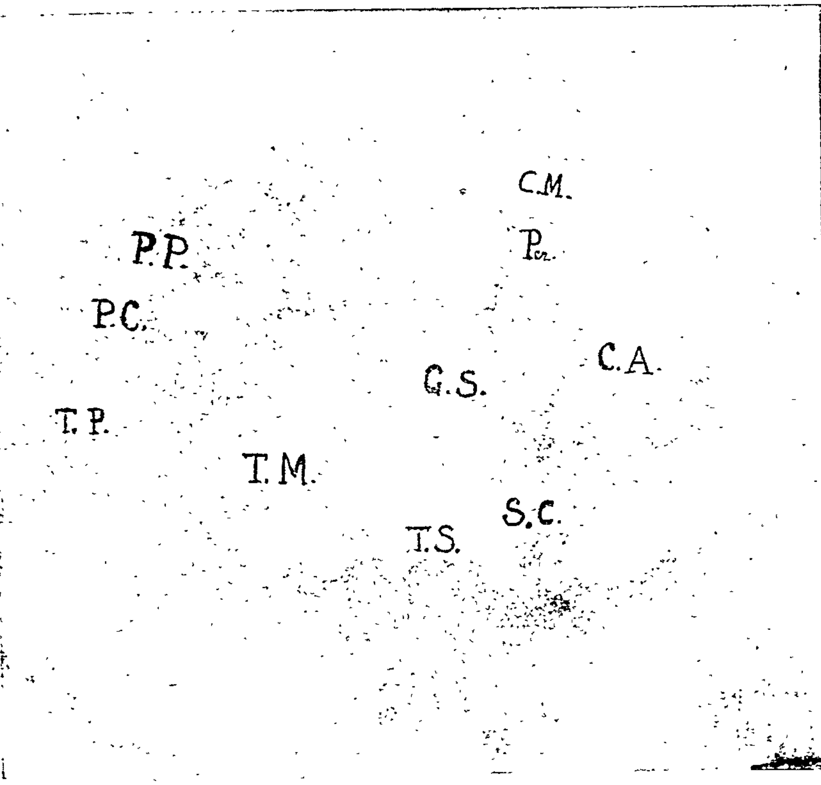


FIG. 1.—Normal arteriogram showing bend of internal carotid artery known as the carotid syphon.

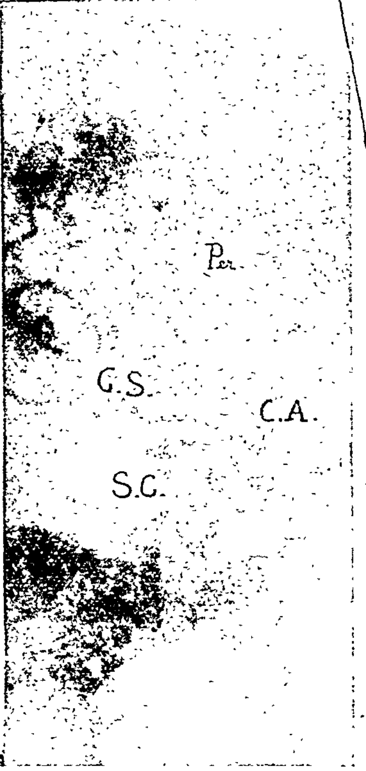


FIG. 2.—Showing band of internal carotid artery forming double syphon (69 per cent. of cases).

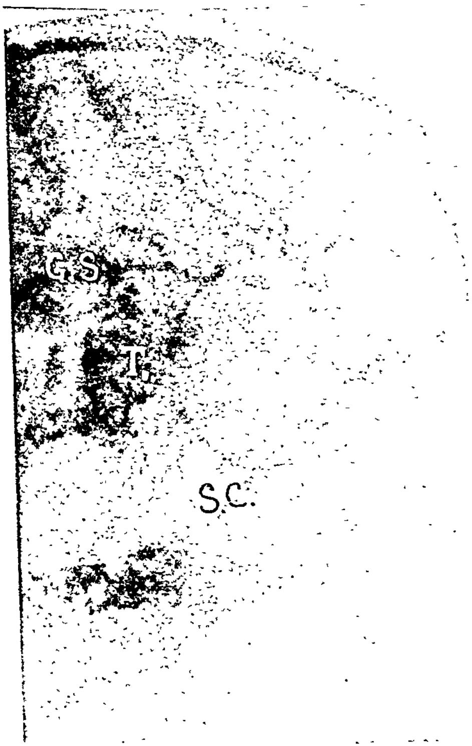


FIG. 3.—Tumour of temporal lobe showing abnormal circulation in the tumour; the Sylvian group pushed up, and the carotid syphon deformed.

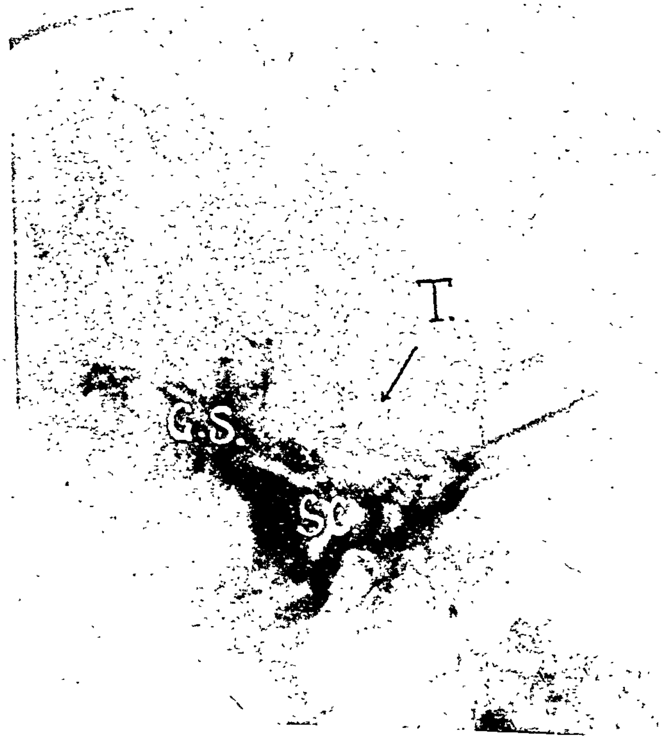


FIG. 4.—Frontal tumour. Carotid syphon and the whole of the Sylvian group pushed down by the tumour.

S.C. = carotid syphon. G.S. = Sylvian group. C.A. = anterior cerebral artery. C.M. = cingulate gyrus artery. Per. = pericallosal artery. P.P. = posterior parietal artery. P.C. = angular gyrus artery. T.P. = posterior temporal artery. T.M. = medial temporal artery. T.S. = superficial temporal artery. T. = tumour.

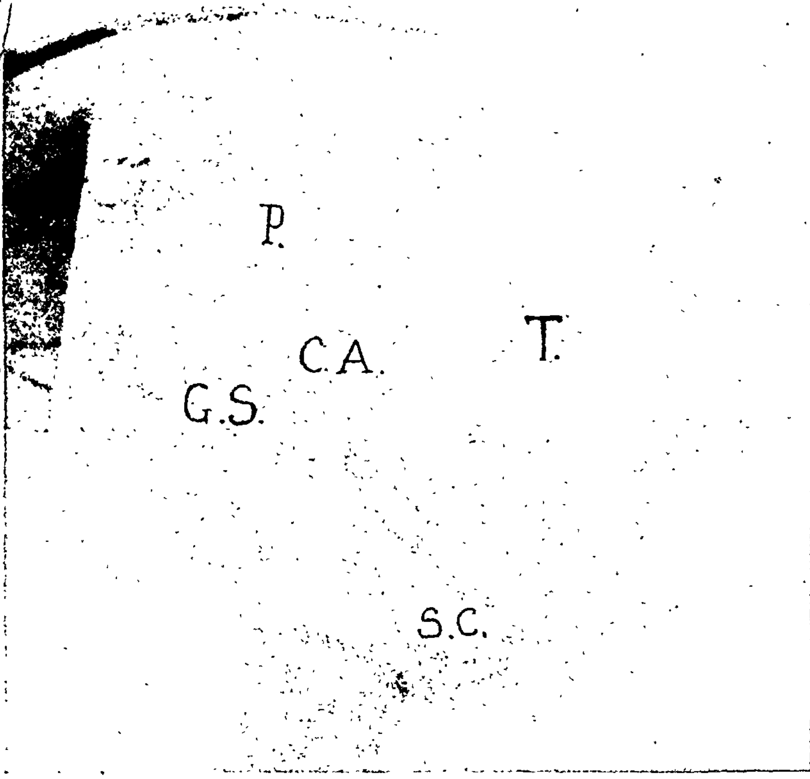


FIG. 5.—Displacement of anterior cerebral artery and pericallosal artery by frontal tumour.

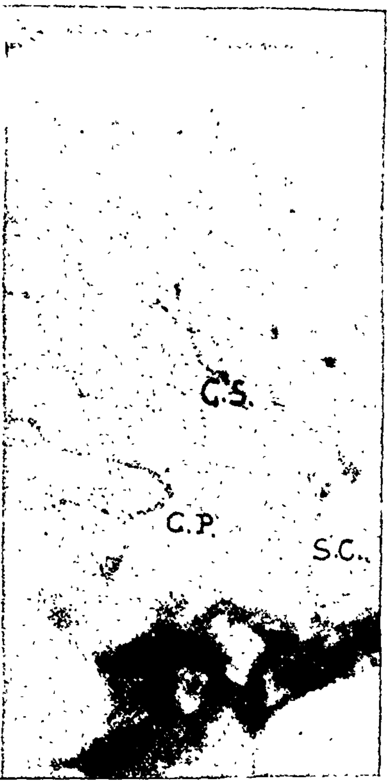


FIG. 6.—Posterior cerebral artery (G.P.) branching from the internal carotid artery (25 per cent. of cases).

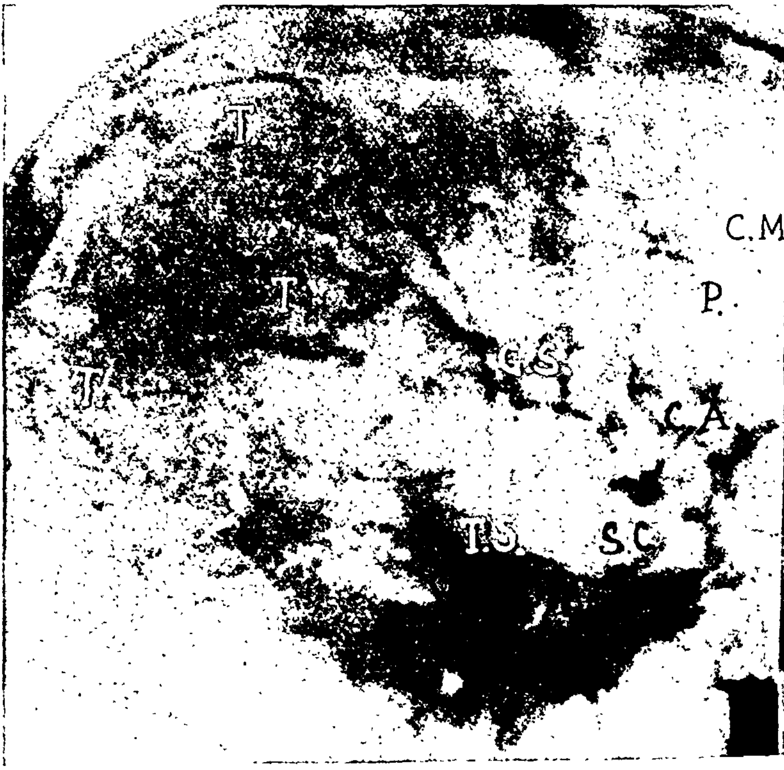


FIG. 7.—Abnormal circulation in a tumour.

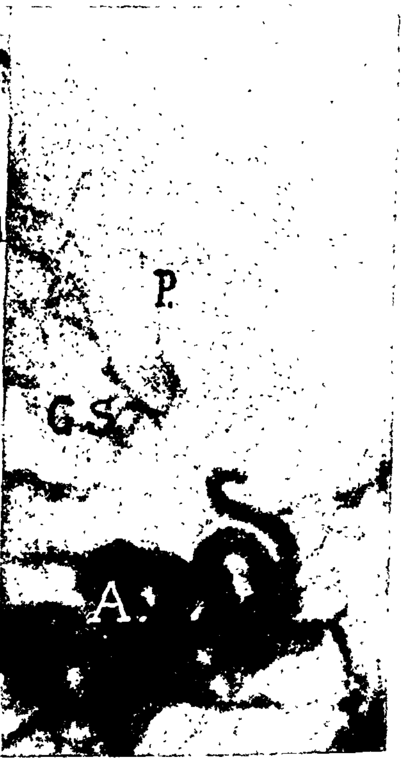


FIG. 8.—Aneurysm of internal carotid.

T.S. = superficial temporal artery. T. = tumour. A. = aneurysm. P. = pericallosal artery. C.A. = anterior cerebral artery. G.S. = Sylvian group. S.C. = carotid syphon. C.M. = cingulate gyrus artery.

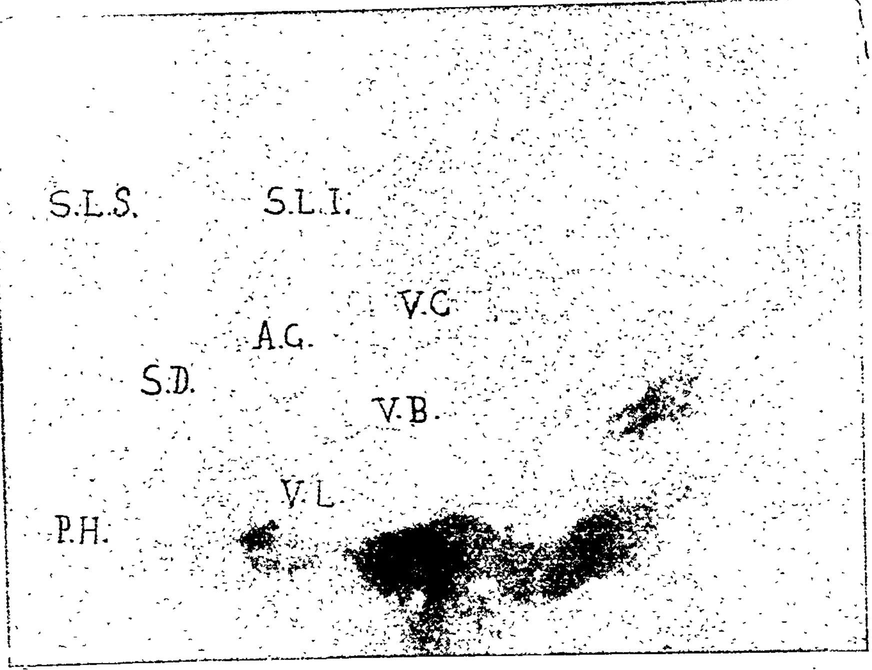


FIG. 9.—Phlebogram showing straight sinus and inferior longitudinal sinus. V.B. = basilar vein. V.G. = vein of Galen. A.G. = ampulla of Galen. S.L.I. = inferior longitudinal sinus. S.L.S. = superior longitudinal sinus. S.D. = straight sinus. P.H. = Torcular Herophili. V.L. = Vein of Labbé.

verses the cavernous
us and another which
ts the artery. The
ole is really more com-
icated. After this second
nd the artery curves
rward and immediately
ckwards again (Fig. 1).
'e call this complex the
rotid syphon. In 70
er cent. of cases the
ternal carotid shows
nother curvature towards
e frontal region, giving
e impression of a double
yphon (Fig. 2).

Tumours of the tem-
oral lobe are apt to
eform the carotid syphon
Fig. 3). Frontal tumours
ay give it the shape of a
alf circle (Fig. 4).

(2) The middle cerebral
rtery is a short vessel
hich gives origin to the
ollowing long arteries:
he posterior temporal, the
rtery of the angular gyrus,
and the posterior parietal. These are the longest arteries in the brain and are, so to speak, the arterial axis of the brain. We give to this arterial section the name of *Sylvian group.* It is raised in cases of temporal tumours (Fig. 3), and is on the contrary depressed in cases of frontal tumours (Fig. 4) and parietal tumours.

(3) The anterior cerebral artery and its branch, the pericallosal artery (Fig. 1), may be dislodged by a tumour (Fig. 5).

(4) The posterior cerebral artery branches from the internal carotid in 25 per cent. of cases (Fig. 6). It is necessary to be aware of this anomaly in order to interpret the arteriograms properly.

In some cases the angiograms show abnormal circulation in the tumours, pointing out the situation of these and the origin of the arteries supplying them, a fact which may be very useful to the surgeon.

Fig. 7 shows an example of such abnormal circulation. The type of blood-supply depicted in the arteriograms may be an indication of the nature of a tumour—for example, a meningioma or an astrocytoma. Cysts show no evidence of circulation.

Aneurysms are easily diagnosed by angiograms. Fig. 8 shows an aneurysm of the internal carotid at the base of the brain.

Phlebograms of the terminal phase of circulation show the position of the straight sinus as well as of the inferior longitudinal sinus, which ought to be considered as one and the same. Both these sinuses are continued in a regular curve (Fig. 9). The vein of Galen and the basilar vein are also visible. The ampulla of Galen, in general very clear, is a tributary of the straight sinus.

The venous circulation of the brain gives in certain instances some diagnostic indications.

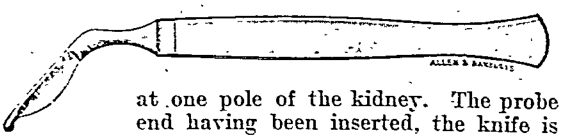
The speed of circulation is very different in the brain as compared with other parts of the head (meninges, face, extracranial tissue). We have ascertained this fact by studying the arteriograms and phlebograms of diverse cases, but confirmation was obtained by a series of angiograms, taken from second to second, after the injection of thorotrast in the common carotid and the external and internal carotids. The chief cause of this difference of circulation-rate between the brain and the other tissue of the head is the capillary barrier. The blood flows very rapidly in the capillaries of the brain, and is kept during some seconds, even some minutes, in the capillaries derived from the external carotid. If we obtain an angiogram of the head six seconds after the injection into the common carotid or into the external carotid, it shows the shadow of the opaque liquid throughout the head. This shadow is identical, whether obtained by means of the thorotrast or by a 25 per cent. solution of sodium iodide.

We have obtained more than 300 angiograms with thorotrast, and lately on both sides in the same session, without inconvenience to the patients, who are able to leave hospital and return home immediately.

NEW INVENTIONS

A RENAL CAPSULOTOMY KNIFE

THE knife shown in the illustration has been designed for incision of the renal capsule prior to decortication in the operation of nephropexy. The modus operandi is simple and effective. A tiny incision, large enough to introduce the probe end of the knife, is made at one pole of the kidney. The probe end having been inserted, the knife is pushed along in the desired direction, the cutting edge dividing the capsule as it is raised from the kidney substance. The incision in the capsule is rapidly performed and there is no injury to the organ itself. The instrument has been made by Messrs. Allen and Hanburys, Ltd., Wigmore-street, London, W.1.



H. MORTON ANDERSON, F.R.C.S. Edin.

Coventry.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF THE HISTORY OF MEDICINE

At a meeting of this section held on Nov. 1st, Sir StClair Thomson, presiding, introduced Prof. Burger, of Amsterdam, who opened a discussion on

The Doctor and the Quack

The quack, he said, can afford to be an optimist. Doubts do not burden him. If his treatment fails the fault must lie in the bungling of his predecessors, the doctors. Deep in the mind of man lies the belief that the medical art is a divine gift. Nature, Prof. Burger pointed out, makes no distinction between the quack and the qualified practitioner, but does what she can for the patients of both; the quack never fails to put a feather into his own cap when his ally has helped him. It is true that some physicians inspire their patients with confidence from the moment they enter a room. The optimism of such a man is transmuted in the heart of his patient into a powerful faith. Not only may functional disturbances disappear under his suggestion, but real organic maladies may undergo an influence for good which is not to be underrated. The quack with a stimulating personality can achieve the same results. Prof. Burger told how a countryman in Holland had performed cures for years, many educated people believing him to have a divine power of healing, though his actual percentage of proven successes was small. Prof. Burger quoted the case of a wizard in Bohemia, with a long white beard, who treated hundreds daily. His treatment room was fitted with mysterious red lamps, stuffed snakes, and skeletons, and blind men and cripples were driven in herds past electrical apparatus, each sufferer being exposed for a second or two to X rays, helium lamps, and radium. The fame of the cures from this ritual was widespread, and the white-bearded Lucifero drew five or six thousand marks a day. In Germany, again, three years ago, the far-famed Zeileis brought a lawsuit for dishonest competition against a professor of medicine: which was a good thing, Prof. Burger remarked, as it gave the professor a chance of throwing some light on the facts. Among other evidence he was able to show that Zeileis had examined a number of healthy people and had credited them with various diseases, and that two women whom he had treated for mysterious swellings had not improved until nature came to their rescue and their pregnancies ended at term. The medical practitioner, said Prof. Burger, with all his faults, differs from the quack in being honestly ambitious for the welfare of his patient.

Dr. M. B. Ray mentioned a friend who promised recovery in a hopeless case and was subsequently adopted as family physician by the relatives because he was the only doctor who had given them any hope.

Mrs. Singer spoke of the long life of non-scientific belief—notably faith in the properties of mandragora and the idea that a ring blessed by the sovereign would cure cramp.

Dr. C. O. Hawthorne suggested an appropriate attitude for the medical profession towards quackery. No attempt, he thought, should be made to suppress unqualified practitioners by law. It was better that people should be free to act foolishly than that they should be compelled and driven into paths of wisdom. But the profession ought to oppose any action which made it difficult for the public to distinguish between those who had had a medical training and those who had not.

Sir StClair Thomson pointed out that superstition is ineradicable in the soul of humanity. There is no intelligence test, he said, that would exclude the possibility of a man having recourse to quacks. He quoted the recently printed view of Sir Norman Angell, that man is a partially reasonable animal, and, if reasoned with long enough, will in the end give heed. But we must recognise this tendency as part of the outfit of human nature.

Dr. E. Stolkind said that there were quacks in every country, and they all did well because they told the patient what he liked to hear.

Dr. Leonard Findlay feared that education did not help. He felt that the more educated the public became the more gullible it was, while the advance of science had been so rapid in recent years that people could hardly be blamed for thinking nothing impossible.

Dr. Alexander Cawadias thought the medical profession to be partly to blame if quacks flourish. The discoveries of Mesmer passed through a period of quackery before being employed therapeutically by Charcot and, later, Freud. Quacks, he pointed out, had played a part in developing hydrotherapy, the employment of sunlight in healing, and electrical treatment, and this was due to the narrow-mindedness of the medical profession about adopting new forms of treatment. And quackery flourished because medical men are too apt themselves to forget that there is an irrational element in medicine.

Sir Thomas Barlow and Mr. Warren Low congratulated Prof. Burger on his address, the discussion on which did little to answer the question put at the outset: "Why does the multitude crowd round the eloquent quack, though they would not trust a broken clock to anyone but a skilled watchmaker?" Perhaps the answer to the riddle was furnished in the lines quoted by Dr. E. W. Goodall:

> "Doubtless the pleasure is as great
> Of being cheated as to cheat."

SECTION OF OTOLOGY

At a meeting of this section held on Nov. 3rd, under the presidency of Mr. W. J. Harrison, a discussion on

Vertigo

was opened by Dr. W. Russell Brain. The term vertigo, he said, implied a sensory disturbance characterised by a hallucination of rotation, either of the patient or his surroundings or both. A definition based merely on derivation would however be much too narrow for clinical practice. It was more amply defined as the sensation of a disordered orientation of the body in space. This orientation of the body depended upon the integration by the nervous system of afferent impulses derived from a number of receptors, especially the retinæ, ciliary and extra-ocular muscles, semicircular canals, otolith organs, the joints and muscles of the cervical spine, and the proprioceptors of the lower limbs. These incoming impulses were coördinated by means of certain centres and tracts, the most important probably being the vestibular nuclei, the cerebellum, and the posterior longitudinal bundle. But there was evidence that the cerebral hemispheres, in particular the parietal lobes, played a part in the regulation of the position of the body in space. Vertigo may result from loss or disorder of the afferent impulses from any of the receptors mentioned, or from disturbance of their coördinating mechanisms. In considering the pathogenesis of Ménière's syndrome in the middle-aged and elderly, a useful parallel might be drawn between the labyrinth and the eye, in which pathological changes of vascular origin were visible.

Aural vertigo was usually associated with a diminished excitability of the semicircular canals, and with a disturbance of the cochlear function, especially with deafness and tinnitus. Nystagmus was also an associated symptom. In severe cases it led to pallor, sweating, and disturbances in the blood pressure and the pulse-rate, also to nausea and vomiting; loss of consciousness was not usually an accompaniment. Diplopia might be associated with aural vertigo owing to the influence of the labyrinth on the posture of the eyes. Exceptional cases occurred, however, to modify these general statements. A patient might have recurrent attacks of apparently typical aural vertigo, with instability between the attacks, and yet show no impairment of excitability of the labyrinth or disturbance of cochlear function. And in rare cases consciousness might be lost. Aural vertigo might be associated with lesions of the eighth nerve: an acoustic neuroma, involvement of the nerve in a localised arachnoiditis, or in a syphilitic meningitis. When the cause was a tumour in addition to impaired cochlear and vestibular function an early symptom was diminution of the corneal reflex on the affected side; later there was headache and papillœdema. Lesions in pons and medulla might cause vertigo by interfering with the vestibular nuclei and their connexions. An example of this was thrombosis of the posterior inferior cerebellar artery.

In disseminated sclerosis vertigo was often an early symptom. But other symptoms, such as pallor of discs or alteration of reflexes, led to a correct diagnosis. Hyperpiesia might be responsible for dizziness, but was not usually associated with a sense of rotation; there was a feeling of instability liable to come on when the person stooped, and probably due to disturbed circulation through the labyrinth. Vertigo often followed head injury; it was one of the triad of symptoms accompanying cerebral contusion, and even when it was a sequel of a slight head injury it might last some time in the form of a feeling of instability following sudden turning of the head or stooping.

Vertigo might occur as an aura of an epileptic attack, especially in petit mal, where the differentiating features from aural vertigo were the suddenness of the onset, the impairment of consciousness, the brevity of the attack, and rapidity of recovery. Vertigo also occurred in migraine, both in association with the headache and vomiting and, less often, as a substitute for a typical attack. It was a common symptom of anxiety neurosis, being then usually associated with feelings of intense anxiety and with symptoms of over-action of the sympathetic nervous system. Dr. Brain considered that luminal was the most useful drug in the treatment of aural vertigo, and discussed the therapeutic value of division of the eighth nerve.

Mr. **Alexander R. Tweedie** dealt with labyrinth tests and their aid to diagnosis. He was unable to place much reliance on rotation tests; of more use were the cold caloric and the galvanic tests in investigating labyrinthine function. The habit of describing a "nystagmus to the right or left" was unfortunate, as nystagmus was a secondary manifestation. The primary factor was an uncontrollable deviation, the result of a stimulus to some part of the vestibular apparatus. The central influence could be shown to be twofold: first a subconscious reflex situated in the midbrain, then a true volitional effort at control. Vestibular nystagmus was a movement resulting from an automatic reflex action designed to correct the deviation; slow turning of the eyes in one direction alternating with a quick and temporarily successful control. The reflex was primarily independent of will-power, as shown by de Kleyn and Versteegh. Nystagmus of the vestibular type could also be induced by lesions situated in the cerebrum and in the posterior cranial fossa. It was important to remember that in nystagmus there were three underlying factors: the initial deviation, the secondary involuntary reflex, and the true volitional effort.

In the clinical application of these facts great caution was needed. Cases fell into two groups: (1) vertigo without obvious aural lesion; (2) active inflammatory lesions of the middle ear associated with spontaneous nystagmus. In the first group he had been able to satisfy himself in most cases of the existence of an aural lesion, generally existing long before the vertigo was manifested. Different stimuli would produce nystagmus in different directions; the effect of the hot and cold caloric tests was opposite. Concerned in the mechanism, he thought, were the connexions between the two nuclei of Deiters, which might also afford a key to the compensation which occurred in the rotation test after complete destruction of the labyrinth on one side. The caloric and galvanic tests were particularly applicable to the vestibular function in non-inflammatory states.

Sir **James Dundas-Grant** said that some patients who had vertigo were epileptic; one such had an epileptic attack associated with cholesteatoma in the middle ear. After surgical treatment of the ear her epilepsy was almost imperceptible, and the slight attacks remaining were relieved by luminal. Following a kick on the mastoid by a horse, a young man had epileptic seizures; these ceased as soon as the mastoid operation had been performed. In the diagnosis of lesions of the eighth nerve he strongly advised the use of the galvanic test.

Mr. **Sydney Scott** spoke of vertigo due to some virus or other, and raised the question how a virus acted on the vestibular system. He had seen severe vertigo and nystagmus in heavy tobacco smokers, especially after indulgence in chain-smoking. One patient soon recovered after she gave up smoking.

Mr. **T. Ritchie Rodger** commented on the rarity of pure cases of Ménière's syndrome. In one of his cases the attacks were associated with an unerupted wisdom tooth, and when that was put right the attacks ceased. Another case seemed to have been completely cured by a single lumbar puncture, though the cerebrospinal fluid was not under pressure.

Mr. **J. F. O'Malley** remarked on the difficulty of applying our knowledge of the causation of vertigo to a particular case; the parallelism between the ear and the eye was however helpful. He related a striking case of vertigo associated with excessive smoking.

Mr. **Thacker-Neville** spoke of vertigo associated with faulty water metabolism, two cases having been very heavy tea-drinkers.

Mr. **F. C. Ormerod** said he had not seen many cases of diplopia associated with vertigo. He agreed that rotatory tests were valuable for normal people, but were not of great assistance for pathological conditions. The most severe cases of vertigo he had seen were the result of cerebellar tumour. A very troublesome type was that associated with chronic suppurative disease of the middle ear; he had seen cases after apparently successful mastoid operations.

Mr. **E. A. Peters** spoke of concussion due to explosions followed by vertigo; in nearly all the cases investigated a hæmorrhage was found alongside the

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AT a meeting of this section held on Nov. 1st, Sir STCLAIR THOMSON, presiding, introduced Prof. BURGER, of Amsterdam, who opened a discussion on

The Doctor and the Quack

The quack, he said, can afford to be an optimist. Doubts do not burden him. If his treatment fails the fault must lie in the bungling of his predecessors, the doctors. Deep in the mind of man lies the belief that the medical art is a divine gift. Nature, Prof. Burger pointed out, makes no distinction between the quack and the qualified practitioner, but does what she can for the patients of both; the quack never fails to put a feather into his own cap when his ally has helped him. It is true that some physicians inspire their patients with confidence from the moment they enter a room. The optimism of such a man is transmuted in the heart of his patient into a powerful faith. Not only may functional disturbances disappear under his suggestion, but real organic maladies may undergo an influence for good which is not to be underrated. The quack with a stimulating personality can achieve the same results. Prof. Burger told how a countryman in Holland had performed cures for years, many educated people believing him to have a divine power of healing, though his actual percentage of proven successes was small. Prof. Burger quoted the case of a wizard in Bohemia, with a long white beard, who treated hundreds daily. His treatment room was fitted with mysterious red lamps, stuffed snakes, and skeletons, and blind men and cripples were driven in herds past electrical apparatus, each sufferer being exposed for a second or two to X rays, helium lamps, and radium. The fame of the cures from this ritual was widespread, and the white-bearded Lucifero drew five or six thousand marks a day. In Germany, again, three years ago, the far-famed Zeileis brought a lawsuit for dishonest competition against a professor of medicine: which was a good thing, Prof. Burger remarked, as it gave the professor a chance of throwing some light on the facts. Among other evidence he was able to show that Zeileis had examined a number of healthy people and had credited them with various diseases, and that two women whom he had treated for mysterious swellings had not improved until nature came to their rescue and their pregnancies ended at term. The medical practitioner, said Prof. Burger, with all his faults, differs from the quack in being honestly ambitious for the welfare of his patient.

Dr. M. B. RAY mentioned a friend who promised recovery in a hopeless case and was subsequently adopted as family physician by the relatives because he was the only doctor who had given them any hope.

Mrs. SINGER spoke of the long life of non-scientific belief—notably faith in the properties of mandragora and the idea that a ring blessed by the sovereign would cure cramp.

Dr. C. O. HAWTHORNE suggested an appropriate attitude for the medical profession towards quackery. No attempt, he thought, should be made to suppress unqualified practitioners by law. It was better that people should be free to act foolishly than that they should be compelled and driven into paths of wisdom. But the profession ought to oppose any action which made it difficult for the public to distinguish between those who had had a medical training and those who had not.

Sir STCLAIR THOMSON pointed out that superstition is ineradicable in the soul of humanity. There is no intelligence test, he said, that would exclude the possibility of a man having recourse to quacks. He quoted the recently printed view of Sir Norman Angell, that man is a partially reasonable animal, and, if reasoned with long enough, will in the end give heed. But we must recognise this tendency as part of the outfit of human nature.

Dr. E. STOLKIND said that there were quacks in every country, and they all did well because they told the patient what he liked to hear.

Dr. LEONARD FINDLAY feared that education did not help. He felt that the more educated the public became the more gullible it was, while the advance of science had been so rapid in recent years that people could hardly be blamed for thinking nothing impossible.

Dr. ALEXANDER CAWADIAS thought the medical profession to be partly to blame if quacks flourish. The discoveries of Mesmer passed through a period of quackery before being employed therapeutically by Charcot and, later, Freud. Quacks, he pointed out, had played a part in developing hydrotherapy, the employment of sunlight in healing, and electrical treatment, and this was due to the narrow-mindedness of the medical profession about adopting new forms of treatment. And quackery flourished because medical men are too apt themselves to forget that there is an irrational element in medicine.

Sir THOMAS BARLOW and Mr. WARREN LOW congratulated Prof. Burger on his address, the discussion on which did little to answer the question put at the outset: "Why does the multitude crowd round the eloquent quack, though they would not trust a broken clock to anyone but a skilled watchmaker?" Perhaps the answer to the riddle was furnished in the lines quoted by Dr. E. W. GOODALL:

> "Doubtless the pleasure is as great
> Of being cheated as to cheat."

SECTION OF OTOLOGY

AT a meeting of this section held on Nov. 3rd, under the presidency of Mr. W. J. HARRISON, a discussion on

Vertigo

was opened by Dr. W. RUSSELL BRAIN. The term vertigo, he said, implied a sensory disturbance characterised by a hallucination of rotation, either of the patient or his surroundings or both. A definition based merely on derivation would however be much too narrow for clinical practice. It was more amply defined as the sensation of a disordered orientation of the body in space. This orientation of the body depended upon the integration by the nervous system of afferent impulses derived from a number of receptors, especially the retinæ, ciliary and extra-ocular muscles, semicircular canals, otolith organs, the joints and muscles of the cervical spine, and the proprioceptors of the lower limbs. These incoming impulses were coördinated by means of certain centres and tracts, the most important probably being the vestibular nuclei, the cerebellum, and the posterior longitudinal bundle. But there was evidence that the cerebral hemispheres, in particular the parietal lobes, played a part in the regulation of the position of the body in space. Vertigo may result from loss or disorder of the afferent impulses from any of the receptors mentioned, or from disturbance of their coördinating mechanisms. In considering the pathogenesis of Ménière's syndrome in the middle-aged and elderly, a useful parallel might be drawn between the labyrinth and the eye, in which pathological changes of vascular origin were visible.

Aural vertigo was usually associated with a diminished excitability of the semicircular canals, and with a disturbance of the cochlear function, especially with deafness and tinnitus. Nystagmus was also an associated symptom. In severe cases it led to pallor, sweating, and disturbances in the blood pressure and the pulse-rate, also to nausea and vomiting; loss of consciousness was not usually an accompaniment. Diplopia might be associated with aural vertigo owing to the influence of the labyrinth on the posture of the eyes. Exceptional cases occurred, however, to modify these general statements. A patient might have recurrent attacks of apparently typical aural vertigo, with instability between the attacks, and yet show no impairment of excitability of the labyrinth or disturbance of cochlear function. And in rare cases consciousness might be lost. Aural vertigo might be associated with lesions of the eighth nerve: an acoustic neuroma, involvement of the nerve in a localised arachnoiditis, or in a syphilitic meningitis. When the cause was a tumour in addition to impaired cochlear and vestibular function an early symptom was diminution of the corneal reflex on the affected side; later there was headache and papillœdema. Lesions in pons and medulla might cause vertigo by interfering with the vestibular nuclei and their connexions. An example of this was thrombosis of the posterior inferior cerebellar artery.

In disseminated sclerosis vertigo was often an early symptom. But other symptoms, such as pallor of discs or alteration of reflexes, led to a correct diagnosis. Hyperpiesia might be responsible for dizziness, but was not usually associated with a sense of rotation; there was a feeling of instability liable to come on when the person stooped, and probably due to disturbed circulation through the labyrinth. Vertigo often followed head injury; it was one of the triad of symptoms accompanying cerebral contusion, and even when it was a sequel of a slight head injury it might last some time in the form of a feeling of instability following sudden turning of the head or stooping.

Vertigo might occur as an aura of an epileptic attack, especially in petit mal, where the differentiating features from aural vertigo were the suddenness of the onset, the impairment of consciousness, the brevity of the attack, and rapidity of recovery. Vertigo also occurred in migraine, both in association with the headache and vomiting and, less often, as a substitute for a typical attack. It was a common symptom of anxiety neurosis, being then usually associated with feelings of intense anxiety and with symptoms of over-action of the sympathetic nervous system. Dr. Brain considered that luminal was the most useful drug in the treatment of aural vertigo, and discussed the therapeutic value of division of the eighth nerve.

Mr. Alexander R. Tweedie dealt with labyrinth tests and their aid to diagnosis. He was unable to place much reliance on rotation tests; of more use were the cold caloric and the galvanic tests in investigating labyrinthine function. The habit of describing a "nystagmus to the right or left" was unfortunate, as nystagmus was a secondary manifestation. The primary factor was an uncontrollable deviation, the result of a stimulus to some part of the vestibular apparatus. The central influence could be shown to be twofold: first a subconscious reflex situated in the midbrain, then a true volitional effort at control. Vestibular nystagmus was a movement resulting from an automatic reflex action designed to correct the deviation; slow turning of the eyes in one direction alternating with a quick and temporarily successful control. The reflex was primarily independent of will-power, as shown by de Kleyn and Versteegh. Nystagmus of the vestibular type could also be induced by lesions situated in the cerebrum and in the posterior cranial fossa. It was important to remember that in nystagmus there were three underlying factors: the initial deviation, the secondary involuntary reflex, and the true volitional effort.

In the clinical application of these facts great caution was needed. Cases fell into two groups: (1) vertigo without obvious aural lesion; (2) active inflammatory lesions of the middle ear associated with spontaneous nystagmus. In the first group he had been able to satisfy himself in most cases of the existence of an aural lesion, generally existing long before the vertigo was manifested. Different stimuli would produce nystagmus in different directions; the effect of the hot and cold caloric tests was opposite. Concerned in the mechanism, he thought, were the connexions between the two nuclei of Deiters, which might also afford a key to the compensation which occurred in the rotation test after complete destruction of the labyrinth on one side. The caloric and galvanic tests were particularly applicable to the vestibular function in non-inflammatory states.

Sir James Dundas-Grant said that some patients who had vertigo were epileptic; one such had an epileptic attack associated with cholesteatoma in the middle ear. After surgical treatment of the ear her epilepsy was almost imperceptible, and the slight attacks remaining were relieved by luminal. Following a kick on the mastoid by a horse, a young man had epileptic seizures; these ceased as soon as the mastoid operation had been performed. In the diagnosis of lesions of the eighth nerve he strongly advised the use of the galvanic test.

Mr. Sydney Scott spoke of vertigo due to some virus or other, and raised the question how a virus acted on the vestibular system. He had seen severe vertigo and nystagmus in heavy tobacco smokers, especially after indulgence in chain-smoking. One patient soon recovered after she gave up smoking.

Mr. T. Ritchie Rodger commented on the rarity of pure cases of Ménière's syndrome. In one of his cases the attacks were associated with an unerupted wisdom tooth, and when that was put right the attacks ceased. Another case seemed to have been completely cured by a single lumbar puncture, though the cerebrospinal fluid was not under pressure.

Mr. J. F. O'Malley remarked on the difficulty of applying our knowledge of the causation of vertigo to a particular case; the parallelism between the ear and the eye was however helpful. He related a striking case of vertigo associated with excessive smoking.

Mr. Thacker-Neville spoke of vertigo associated with faulty water metabolism, two cases having been very heavy tea-drinkers.

Mr. F. C. Ormerod said he had not seen many cases of diplopia associated with vertigo. He agreed that rotatory tests were valuable for normal people, but were not of great assistance for pathological conditions. The most severe cases of vertigo he had seen were the result of cerebellar tumour. A very troublesome type was that associated with chronic suppurative disease of the middle ear; he had seen cases after apparently successful mastoid operations.

Mr. E. A. Peters spoke of concussion due to explosions followed by vertigo; in nearly all the cases investigated a hæmorrhage was found alongside the eighth nerve. Often there was no deafness. He thought nystagmus in a particular case should be based on the direction of the slow labyrinthine movement, not on the central quick movement.

Mr. C. W. GIBB related a case of mastoiditis with papillœdema, in which intracranial abscess was suspected but in spite of exploration was not found, spontaneous recovery occurring.

Mr. W. STIRK ADAMS thought that skew deviation was an important symptom which would repay investigation. He agreed that tests should be done oftener in acute cases, and related an instance of meningitis following mastoiditis, the autopsy revealing suppurative labyrinthitis.

SECTION OF PSYCHIATRY

A MEETING was held on Nov. 14th when Dr. EDWARD MAPOTHER gave his presidential address on

Tough or Tender: a Plea for Nominalism in Psychiatry

In British psychiatry of the past generation, he said, there has been a marked contrast between the wide spread of established knowledge concerning mental disorders and its application in treatment, and the limited extent to which the opportunities given by the new clinics for children and early cases have been utilised for research proper. One of the main reasons for this contrast is domination of psychiatry for a generation by idealism, which has replaced a former materialism, and the neglect of the proper attitude of science, which is nominalism. These terms may be defined as follows:—

Idealism is any system in which the object of external perception is held to consist of ideas. This exists in two forms: (*a*) subjective idealism, which regards all as ideas of the perceiving mind; (*b*) absolute idealism, which ascribes all not to our own ideas but to those of a universal mind.

Materialism is the doctrine that nothing exists except matter and its movements, and that the phenomena of consciousness are due wholly to material agencies.

Nominalism is the view which regards universals or abstract conceptions as mere names without any corresponding realities, and believes that immediate processes of perception are the only objects of knowledge.

Science is distinguished not by its subject matter but by its aim and method. The goal of science is the production of formulæ summarising the maximum number of past phenomena in the simplest, most concise, and most frugal manner possible, enabling us to foretell a sequence of future phenomena with the maximum economy of thought. It is crucial in science to distinguish clearly between observation and interpretation. Scientific observations must fulfil three requirements; they must be public, impersonal, and quantitative. Scientific interpretation must combine a maximum of simplicity, conciseness, comprehensiveness, and economy of hypothesis.

True modern science is completely phenomenalist. It is wholly concerned with events and with their sequence in space time. It is utterly agnostic as to what endures between those events. It recognises clearly as conceptual fictions anything which it may postulate as so enduring. Thus it is equally opposed to materialism and idealism and equally agnostic concerning the reality of mind and of matter.

This standpoint is opposed to the tendency of most prevalent psychology to exalt the alleged advance made by reference of phenomena to such conceptual fictions as instincts, complexes, and the unconscious mind.

Jung has emphasised the correlation between, on the one hand, nominalism, predominant extraversion, and what James called tough-mindedness, and, on the other hand, between idealism, predominant introversion, and tender-mindedness.

MODERN INFLUENCES IN ENGLISH PSYCHIATRY

Three writers who have largely influenced English psychiatry during the past generation, viz., William McDougall, Sigmund Freud, and Bernard Hart, have promoted the idealist outlook in the study of both normal and morbid mental processes. They have directed attention towards subjective events, i.e., changes in consciousness and away from objective occurrences, i.e., behaviour. They have tended to over-estimate scientific value of such general concepts as instincts and the unconscious mind. McDougall and Hart confine themselves almost to classification and conceptual formulations, while Freud has added to psychology a mass of novel observation. The scientific validity of this is marred by privacy, by bias, and by lack of all effort to make it quantitative. Hart has acclaimed as an epoch-making advance the introduction by Freud of the concept of the unconscious mind on the ground that it makes possible a self-contained psychology. There are many reasons for doubting the value of thus isolating psychology, particularly by importing into it many concepts for ever incapable of correlation with physical equivalents. Further, while Hart suggests the purely conceptual nature of the "unconscious" of Freud and his followers, they insist on its phenomenal nature and definite composition.

All the three psychologists named have a metaphysical background of animism. In the case of McDougall this takes the form of interactionism, in the case of Freud psychophysical parallelism. Recently Hart has tended to identify himself with the subjective idealism said by Jeans and Eddington to be the philosophy almost universal among physicists. Einstein, Planck, and Rutherford have utterly repudiated this metaphysic and the indeterminism which is a feature of it. Jeans and Eddington freely accept that the subjective idealism which they proclaim involves the introduction into science of theological conceptions. These and the indeterminacy which they necessarily imply abolish the possibility of those forecasts which it is the purpose of science to provide. A psychology and a physic alike which aim at being scientific must be causalistic not finalistic.

The worst effect of idealism in psychology has been its influence in promoting speculation as a substitute for controlled observation and experiment. The alleged successes of psychotherapy do not conform to the standard of scientific evidence in such a way as to make them valid proof of the theories upon which the psychotherapy is alleged to rest.

It is perfectly possible to frame a scientific psychology which would regard causalistic description of the processes of consciousness and behaviourism and the attempt to correlate these as its triple objective. It should be an aim to frame an explanation of the objective facts of behaviour both normal and abnormal in formulæ constructed as an upward continuance of those principles which account for responses mediated by lower levels of the nervous system. The starting-point of such formulæ can be found in the work of Hughlings Jackson, of Pavlov, and others. Attention to principles of neurology would lessen the vogue in psychiatry of the fallacies of the single cause, the solitary syndrome, and the specific cure.

INSTITUTES OF PSYCHIATRY

The best practical measure to ensure real advance in psychiatry by controlled observation and experiment would be the establishment of institutes of psychiatry. Each such institute should have abundant access to cases illustrating every form, degree, and stage of mental disorder. Each should be staffed by at least half a dozen experts in different branches of science relevant to psychiatry. These experts will probably not be found in the ranks of those already experienced in psychiatry though the head of the institute should have such general experience. They should be given a year or two of intensive training in the subject so as to give them an appreciation of its immediate problems and a live interest in these. They should devote their whole time to research and the training of others for research, and should be protected from all other duties such as elementary teaching. The conditions of this appointment, including salary, tenure, and pension, should be such as will attract men of first-class intellect. Posts would be comparable to those recently established by the Rockefeller Foundation and the Medical Research Council, and presently to be established by the Beit Trust. There is legal provision in the Mental Treatment Act for such expenditure, and £50,000 a year spent on research in this way might reasonably be expected materially to reduce the £10,000,000 now spent on maintenance of the mentally defective and disordered.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT a meeting of this society held in Manchester on Oct. 27th, with Mr. LEYLAND ROBINSON (Liverpool), the president, in the chair, a paper on the

Ætiology of Fœtal Malformations

was read by Mr. P. W. MALPAS (Liverpool). It was based, he said, upon a series of 294 fœtal malformations observed in 13,964 deliveries. The object of his inquiry had been to obtain reliable data of the incidence of malformations in general, and also to attempt to decide whether the malformations were of genetic or environmental origin. The total incidence of malformations in the series was 2·11 per cent. With some of them—notably anencephalus, hydrocephalus, hare-lip and cleft palate, mongolism, and congenital heart disease—the incidence showed a steady increase with the age of the mother. On the other hand, such malformations as spina bifida, talipes, and hypospadias showed no variation of frequency with the mother's age, and the incidence in the various age-groups was such as might be expected on the basis of random selection. The incidence of anencephalus, hydrocephalus, hare-lip and cleft palate, mongolism, and heart disease was found to increase with increasing parity, whereas club-foot, hypospadias, and spina bifida proved to have no such relationship to parity—with the possible exception of hypospadias, which showed an incidence in primiparæ (75 per cent.) too high to be explained on the basis of random genetic selection. Details of the ages of the fathers were obtained in some cases but in none was there noted a marked discrepancy between the respective ages of the two parents. Details of the presence or absence of consanguinity between the parents were obtained in 104 cases, and in none of them was it present. In the whole series there was only one instance of a malformation with a known hereditary bias—a case of web-toes, in which both mother and maternal grandfather had a similar malformation. There were 11 instances of previous malformations occurring in the children born to the parents of the malformed fœtus, and the incidence of a previous malformation was 4 per cent.—a higher figure than the normal 2 per cent. incidence of malformations. The recurrent factor was higher in the case of spina bifida, anencephalus, and hydrocephalus than with other malformations. The frequency with which a given malformation was followed later by another type of malformation appeared to show from another standpoint that most of the malformations dealt with could not be due to the action of specific groups of genetic factors, and reinforced the view that they are mostly attributable to the interplay of environmental factors.

Of the malformed infants 175 were males and 185 females. Anencephalus showed the high proportion of 69 females to 21 males; and iniencephalus was the only other malformation in which an excess of females occurred. Syphilis appeared to bear some relationship to the production of malformations, particularly of hydrocephalus. Among the mothers there was very definite evidence of poor physique and in many there was an unduly high proportion of feeble-mindedness or a low standard of living. There appeared to be a slight relationship between sterility and the subsequent chance of a malformed fœtus.

Mr. Malpas concluded that while some malformations were of genetic origin, the greater number were either caused by or conditioned by maternal environmental factors, and chief among these were age and parity of the mothers.

Gynæcological Cases

A number of cases were described, many of them being illustrated by specimens removed at operation.

ADVANCED EXTRA-UTERINE PREGNANCY

Dr. J. W. BRIDE (Manchester) described a case of extra-uterine pregnancy in a primipara aged 29, who attended the antenatal clinic at St. Mary's Hospital for the first time at the seventh month. In the early months of pregnancy she had had severe attacks of pain in the left iliac fossa, with a slight show at the third month. She was admitted to hospital at the eighth month because of slight continuous hæmorrhage, and the diagnosis of a dead fœtus and possible placenta prævia was made. Induction was attempted both medicinally and by hydrostatic bag and later the cavity of the uterus was explored and found to be empty. Radiography then revealed an extra-uterine pregnancy. Laparotomy was performed and a macerated fœtus removed. It was possible to remove the placental cotyledons but Dr. Bride thought it advisable to leave the bulk of the chorion behind, and the sac was marsupialised and packed with gauze and a large tube drain. Recovery was uneventful.

AN OVARIAN CYST COMPLICATING LABOUR

Prof. DANIEL DOUGAL (Manchester) reported three cases, including one of ruptured pseudo-myxomatous cyst complicating pregnancy and labour. The patient was first seen at the thirty-ninth week and gave a history of rapid increase in the size of the abdomen during the previous few weeks, associated with severe pressure symptoms. On examination Prof. Dougal found the abdomen enormously distended and with a marked fluid thrill. The fœtus could be felt lying longitudinally in the right lower part of the abdomen. A diagnosis of acute hydramnios was made and medicinal induction of labour decided upon. Labour began shortly afterwards and on rupture of the membranes only a small quantity of liquor escaped. The patient remained in slow labour for two days, but when the cervix was fully dilated the presenting breech was *still* high. The diagnosis was then modified to hydramnios in the upper sac of a twin pregnancy. Paracentesis was decided upon, but on puncturing the abdomen no amniotic fluid escaped but only a little blood-stained colloid material. This revealed the presence of an ovarian cyst, and when laparotomy was performed a ruptured pseudo-myxomatous cyst was discovered arising from the left ovary. A living child was delivered by Cæsarean section and the uterus and tumour removed by subtotal hysterectomy. The patient eventually made a good recovery.

LOSS OF ASCITIC FLUID THROUGH THE VAGINA

Mr. W. W. **King** (Sheffield) described a case in which ascitic fluid was evacuated through the vagina, simulating urinary incontinence. The patient, aged 57, had complained of incontinence of urine for more than a year, which had been particularly troublesome at night. The fluid tended to come away on exertion especially on bending, and at times came away in floods on stooping. Previous micturition did not prevent the passage of what she thought to be urine. On examination an abdominal tumour, the size of a four months' pregnancy, was discovered; it was hard and mobile and which was thought to be a uterine myoma.' Some free fluid could be detected in the abdominal cavity. Pelvic examination revealed a small cystocele and the uterus normal in size and attached to the abdominal tumour by a pedicle. No cause for the incontinence of urine was found. On examination under anæsthesia a little fluid was found in the vagina flowing out through the cervix and about ½ oz. was collected for examination. Laparotomy revealed a fibroma of the right ovary the size of a four months' pregnancy and there was a moderate amount of clear ascitic fluid in the peritoneal cavity. Total hysterectomy with removal of both ovaries was performed. Examination of the fluid collected from the vagina showed it to be ascitic fluid, and this apparently had been escaping through the Fallopian tubes and uterus. The patient made a good recovery and was completely cured.

Dr. J. W. **Burns** (Liverpool) exhibited a specimen for diagnosis.

LIVERPOOL MEDICAL INSTITUTION

At a meeting of this institution on Nov. 2nd, with Dr. H. R. **Hurter**, the president, in the chair, a paper on

Chronic Ulceration of the Colon

was read by Dr. **Edmund Spriggs**. He gave a detailed account of his clinical experience of the disease with special reference to the treatment and prognosis of 42 patients treated in 17 years. Of these 35 were alive to date, most of them living normal lives. Thirteen had an amœbic infection. The mortality was far below that in published statistics from general hospitals, and the prognosis for normal moderate activity as well as for life much better. The average period of treatment was three months. The fact that most of the cases responded well to treatment proved that their betterment was not due to accidental remissions. Dr. Spriggs emphasised the importance of examination with the microscope, sigmoidoscope, and X rays. In treatment vaccines and sera had seldom proved more useful than the older methods of rest and diet, medicines, and douching. The main factor was daily close nursing and medical care.

In the discussion which followed, Prof. **John Hay** referred to the type of case admitted into the general hospitals, and said that he classed ulcerative colitis among the dangerous diseases; in the more severe forms, indeed, it was deadly. In his experience transfusion was life-saving, and it should never be delayed if, on examination, the degree of anæmia was found to have reached a dangerously low level. Persistent vomiting, although not a common feature, sometimes gave rise to serious difficulty, since success in treatment depended upon an adequate and proper diet. There was a real danger of vitamin starvation if by any chance the need for adequate vitamins in the diet was overlooked. Achalasia of the upper sphincter of the œsophagus was an interesting symptom seen occasionally. In the more acute stages of the illness, with pyrexia and rapid heart-rate, anything in the nature of lavage of the bowel was detrimental, and reliance must then be placed upon opium to diminish the discomfort and frequency of the motions. In the United States Prof. Hay had found a widespread tendency to discredit Bargen's theory and an increasing belief in the dysenteric origin of chronic ulcerative colitis. Paulson, of Washington, held that continued hæmorrhage tended to kill all organisms except the cocci; these were found in the stools not because they were causative but because they alone survived. In Mount Sinai hospital in 40 per cent. of the cases a bacteriophage specific for the dysenteric organism had been demonstrated. The trend of opinion seemed to be against operative interference except in certain well-defined conditions.

Dr. **Robert Coope** said that the search for some specific bacteriological cause of ulcerative colitis tended to direct attention away from the fact that the large intestine itself was a delicate organ, easily damaged and, when damaged, not restored to health without thoughtful and long-continued care. Now and again, some special form of treatment might give results that seemed dramatic enough; but always it was *important to visualise the condition of the bowel* itself, to be awake to the fact that already serious damage might be done even while symptoms and the appearances of the stools were not very alarming, and to ensure that, during treatment, the bowel was given the conditions under which it might have the best chance of gaining and maintaining recovery. Careful insight into the history of most of the cases that reached an advanced stage would reveal symptoms that should have demanded full investigation years before—attacks of liquid diarrhœa, with mucus and with stools that under the microscope could be seen to contain pus; attacks which recurred, in spite of treatment, long before there was any obvious passing of blood, and which depended upon the early pathology of chronic ulcerative colitis. If every acute or subacute inflammation of the colon warned one of the possibility of future trouble, just as an appendix attack (not operated upon) kept one on the *qui vive*, there would be fewer advanced and desperate cases of ulcerative colitis. Moreover, once an attack of colitis had occurred, the delicate large bowel needed to be guarded from irritation, and both diet and drugs were important to this end. Dr. Coope wished to emphasise particularly the disadvantage of allowing undigested and partially digested meat-fibre to reach the large bowel, there to putrefy. Examination of the stools and urine afforded a simple control of this. It was a practical point, in that the products of intestinal putrefaction could seriously irritate and damage the large bowel, and furthermore that during convalescence it might be wise to keep a patient off meat diet for many months.

Dr. R. W. **Brookfield** alluded to two unusual complications observed by him in cases of ulcerative colitis. In one patient extensive sloughing of the abdominal wall had followed the application of Scott's dressing for a few hours and led to the patient's death. In another, bilateral suppurative parotitis due to the *Staphylococcus aureus* had occurred. The patient recovered. He also mentioned the difficulty sometimes experienced in diagnosing ulcerative colitis from intestinal tuberculosis. In one case where radiography of chest and abdomen gave negative results, tubercle bacilli had been repeatedly searched for in the fæces and were only found after digestion of the latter with antiformin. In a small series of cases he had studied no instance of complete achlorhydria had been encountered. This was in marked contrast to the large group of diarrhœas, typified by the recurrent attacks of diarrhœa met with in pernicious anæmia and subacute combined sclerosis, in which achlorhydria was an important ætiological factor.

REVIEWS AND NOTICES OF BOOKS

Mental Defect

By LIONEL S. PENROSE, M.A., M.D., Research Medical Officer, Royal Eastern Counties Institution, Colchester. London: Sidgwick and Jackson, Ltd. 1933. Pp. 183. 8*s.* 6*d.*

THIS book, the first of a series dealing with problems of social biology, edited by Prof. Lancelot Hogben, reflects the approach of the scientific research student to the subject of mental defect. Methods of physical, physiological, psychological, and genetical investigation are indicated, with the results so far obtained, but it is made clear that real research into mental defect is yet in its beginnings. The chapter on analytical methods assumes a knowledge of genetics which is not common among medical men; some introductory matter would have been helpful here. Dr. Penrose's concise style, in which every sentence embodies a separate fact, makes this chapter hard to read except for the expert. It is essential, however, to the purpose of the book and therefore must be mastered. Dr. Penrose is not content to accept without question traditional views on pathology, ætiology, classification, and treatment, and indeed the main interest of his book consists in its fresh ideas on these matters. The author is sceptical of the close relationship between cerebral cortical structure and intelligence, often too dogmatically asserted, and he questions whether histological examinations of brains of defectives with intelligence quotients (I.Q.) over 50 would reveal similar pathological changes to those claimed to be discovered in low-grade cases.

The part played by environment in causation of mental defect has, in Dr. Penrose's opinion, been unduly neglected: primary amentia has been too readily assumed to be hereditary. Out of 513 cases studied, as many as 329 could not be definitely classed as either primary or secondary amentia. He concludes that 91 per cent. of cases are due "in some measure" to heredity, and 71 per cent. to environment. He would therefore set aside this traditional classification; but he is prepared to accept Dr. E. O. Lewis's division of cases into the pathological and the subcultural, with the reservations that there are many mixed cases, and that subcultural cases must not be regarded necessarily as cases of simple primary amentia, and therefore hereditary. "Strictly speaking," he says, "an environmental element enters into the description of every case actually certified, since the necessity for certification depends upon social conditions." Several chapters of exceptional merit are devoted to pathological types.

At a time when the question of sterilisation is prominent, the provocative chapter on treatment will arouse special interest. It is characteristic of Dr. Penrose that in dealing with preventive treatment he begins with the environment—antenatal environment including the health of the mother from conception onwards, her nutrition, endocrine disorders, anti-syphilitic measures, and so forth. He sees in the improvement of social conditions a chance of avoiding certification of behaviour cases of high grades. He shows more courage than most writers in suggesting the desirability of judicial destruction at an early age of children who are obviously seriously defective; his curious exaggeration of the difficulty of early detection of such cases is perhaps an unconscious defence mechanism against attack. He displays some impatience with pro-sterilisation die-hards. His main contention appears to be that sterilisation need only be considered in reference to defectives of I.Q. over 60, and that as these have usually to be placed in institutions because of behaviour difficulties sterilisation would be of no avail. "What would be the use," is his question, "of bringing in legislation to sterilise the particular persons who are already adequately catered for and segregated by the present law"? Surely the latter part of this sentence takes for granted an ideal state of affairs very far from being realised. His suggestion that sterilisation is regarded by some and even welcomed as a punitive measure scarcely applies to mental defect, and his illustration is hardly relevant. His further suggestion that "unconscious motives" lie behind the propaganda is one that might be used in the attempt to discredit many movements even less controversial. He is not entirely convincing in his handling of sterilisation.

The book as a whole is full of valuable material. It is not merely another addition to the already large number of books on the subject, for it has an atmosphere and an outlook all its own, and no one interested in mental defect can afford to ignore it.

Bone Growth in Health and Disease

By H. A. HARRIS, D.Sc. Lond., M.B., Professor of Clinical Anatomy, University College and University College Hospital. London: Humphrey Milford, Oxford University Press. 1933. Pp. 248. 34*s.*

THE issue in book form of the outcome of Prof. Harris's extensive radiological and histological researches has been expected for some time, and we congratulate him on the appearance of such an interesting and valuable compilation. His work was begun with the object of solving the problem of the origin of those transverse lines on the long bones which had usually been ascribed to healed rickets, but which Prof. Harris has certainly proved to be lines caused by temporary cessation of growth from any cause. He has also established by radiology the truth of John Hunter's and Duhamel's contentions as to mode of growth in length. It seems probable that in the future importance will be attached to these lines from various other points of view. Prof. Harris insists on the recognition of the three zones (proliferation, calcification, and osseous change) as biologically distinct; but he deals with the compound growth as a whole, and does not concern himself particularly with the method or reason for the presence of earthly salts until he nears the end of his monograph, when, inspired by Robert Robison's phosphatase and supported by the glycogen content of cartilage cells near centres of ossification, he lets himself go on a physico-chemical hypothesis. We gather that Prof. Harris considers osteoblasts to be produced as one result of rejuvenescence of senescent cartilage cells, but he does not, presumably, claim this origin for them all. The relevant illustration does not seem to us to show anything convincing, and in any case the osteoblasts of membrane bones must be considered. Without in any way subscribing to the views of Policard and Leriche, we would like to see some objective proof that osteoblasts do really perform the functions with which they are here credited. The sections dealing with diseases affecting bone growth should be of importance for the pathologist, and we found the account of the conditions in Paget's disease especially interesting. Prof. Harris tilts every now and then at the vitamin-enthusiasts;

we confess to sympathy with his insistence on the need of mixed diet of fresh food for children suffering from diseases causing retardation of growth. Many of his observations are of great anatomical interest, apart from histology, and will doubtless lead to further investigations.

The book should be studied by all whose work or inclination embraces this subject. The opinions expressed may arouse opposition or even hostility in those who, like the author, have formed definite views on osteogenesis, but this does not take away from its value or its interest.

The Camberwell Miracle

By J. D. BERESFORD. London: William Heinemann, *Ltd.* *1933.* *Pp. 327.* *7s. 6d.*

A CAPABLE novelist relates here the circumstances in which a lame girl appeared to owe her cure to the psychological ministrations of a medical man. The cure and the doctor were advertised, with no instigation from the miracle worker, in a way that led to the removal of the doctor from the medical register, and an action for libel between two newspapers. A curiously conducted trial leads to the establishment of the doctor's bona fides, so that his name is restored to the register. The author has tackled a difficult problem and will leave readers much where they were before in respect of its solution. The book is thoroughly well written and the thaumaturge's character and capabilities are sympathetically revealed. If the question posed is, as it is stated to be on the jacket: "Can all diseases and deformities be cured by mental healing, under favourable conditions?" then the reply furnished by the story is not in that general affirmative which the jacket would further suggest. But probably nothing so sweeping was intended by the author. We recommend "The Camberwell Miracle" to our readers, for it sets out fairly the difficulties inherent in psychological treatment, although a closer knowledge of medical practice and organisation would have removed certain of the incidental interest. The dice are loaded on the side of the miracle worker by making his chief opponent a bounder. A more receptive attitude towards the possibilities that underlie mental healing was displayed by some of the speakers who took part in the recent discussion at the Royal Society of Medicine on Prof. Burger's interesting address on quackery.

The Coming of Man: Was it Accident or Design?

By R. BROOM, M.D., F.R.S. London: Witherby and Co. 1933. *Pp. 238.* *10s. 6d.*

Dr. Broom is an acknowledged authority on vertebrate palæontology who has won distinction by his studies of the reptilian and mammalian fossils of South Africa. He has therefore a first hand, direct, and intimate knowledge of the material on which he bases the general considerations of which he gives an account in this interesting volume. Like Osborn, similarly equipped by a lifelong study of the American material, he comes to the considered opinion that evolution cannot be explained along Darwinian lines, and that the whole picture gives an irrepressible conviction that evolution is purposive and has been directed by one or more external agencies roughly similar to what in religious language have been called God and Devil. Animals and plants are now so specialised that there are few, if any, undifferentiated foci left from which further evolution along physical lines can reasonably be expected; possibly, says Dr. Broom, the directing agencies are now more interested in producing higher types of personality, and what we call conscience may be our perception of their suggestions. Conclusions such as these, coming as they do from masters of their craft, cannot be lightly set aside. A hundred years ago some of the best minds in science were writing the Bridgewater Treatises, and after the long dominance of Victorian materialism we have perhaps come round again to see in nature the manifestation of the wisdom and goodness of God. Incidentally, those who are not much interested in Dr. Broom's philosophy will find a long account of the Taungs skull found by Prof. Dart in Bechuanaland; it is regarded as nearer a missing link than anything else that has been discovered.

Surgical Anatomy

Second edition. By GRANT MASSIE, M.B., M.S., F.R.C.S., Assistant Surgeon to Guy's Hospital. *London: J. and A. Churchill. 1933. Pp. 458.* *18s.*

IN this second edition certain changes and additions, both in illustrations and text, have been introduced. New sections deal with injuries and infections of the hand. We would like to see more stress laid on the lumbrical muscles in association with deep infections in this region. Useful figures are given showing different kinds of right and wrong incisions. In the anatomical accounts of the knee we do not find ourselves in complete accord with the author's views about the lower attachment of the tibial collateral ligament, and we may point out that, although the relevant diagram showing the intercostal nerve course may agree with the modern teaching, the account of the intercostal arrangements in the text can hardly be said to do so. A new terminal section deals adequately with the autonomic nervous system and the anatomical bases of certain surgical proceedings connected therewith.

Letters and Diaries of A. F. R. Wollaston

Edited by MARY WOLLASTON. London: Cambridge University Press. 1933. Pp. 261. Four portraits. *12s.* *6d.*

Wollaston was a man with an inexhaustible passion for the country and wild places and the birds and insects and flowers which live in them. He took a medical qualification because he thought it would help him to get taken on expeditions, which it did, and it proved useful, too, in the war. After wandering up and down the world for 30 years he married and had a home for the first time. He left the Cotswolds when he was 53 to take up tutorial work at his beloved King's College, where a year later he was killed by a crazy undergraduate. In this very charming book his diaries and letters tell the tale of his adventures—Lapland, Egypt, Australia, Japan, Central Africa and the Ruwenzori Mountains, twice to New Guinea, Everest, and Colombia, and the gaps filled in with the wilder parts of Britain. It will be a delight to those who knew him and will make those who did not wish they had. Naturalists are generally nice people and Wollaston must have been one of the nicest, with the advantage that he had the knack of vivid expression. "Cor" at the top of p. 181 is an unexpected misprint.

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THE LANCET

LONDON: SATURDAY, NOVEMBER 18, 1933

ECONOMY AND RESEARCH IN THE SCHOOL MEDICAL SERVICE

THE Ray Committee in its report last autumn remarked[1] that while no responsible man would challenge the need for continued research in preventive medicine, it was a question whether time and expense could not be saved by an extension of the principles of coördination into the field of local school medical research. This committee recommended that special researches, as distinct from compilations based on evidence obtained in the ordinary course of medical inspection and treatment, should not be initiated without prior reference to the medical department of the Board of Education. On this pronouncement a responsible writer comments in our own columns thus: "It is hard to conceive of any procedure more likely to strangle the spirit of research." Progress in the service, as Dr. O. M. HOLDEN said[2] a week or two ago in his presidential address to the school medical service group of the M.O.H.'s, is dependent on thought and research. The doctor who can discriminate between health and ill-health on the strength of the cursory scrutiny of a march past belongs to the race of supermen; and in his report[3] as chief medical officer of the Board of Education, Sir GEORGE NEWMAN says in a pregnant sentence—the research spirit is the key of clinical examination. Diagnosis and prognosis are not becoming simpler; they are becoming more detailed and exacting. The school medical officer is faced with new problems of diagnosis, treatment, prognosis, and prevention. He is not to be an automatom or a mechanic but an explorer finding new ways and means of helping the subnormal child and strengthening the normal. The service, in Dr. HOLDEN's words, is a receiver of damaged goods—the extent of which can be seen in a table repeated year by year in the introduction of the chief medical officer's report. In the same introduction is a table showing the incidence of certain defects requiring treatment for each of the last five years. Last year every thousand inspections revealed 86 defects of vision, 51 enlarged tonsils and adenoids, 10 cases of malnutrition, 10 cases of skin disease, 10 deformities of various kinds, but the only item which has shown real decline in the period is tuberculosis, in which there is a significant drop. Orderly discharge of routine inspection and treatment must constitute the major preoccupation of the school doctor, but surely it is well to leave him a large degree of liberty to plan his work in accordance with the particular needs of the area. Out of these arose a large majority of the special investigations made last year (and set out in an appendix to the chief medical officer's report); they average about a hundred a year and are classified in the medical department of the Board under 37 headings, of which the principal, in order of frequency, are:—

rheumatism and heart disease, mentally defective children, eyes and defective vision, nutrition and provision of meals, nose and throat, physically defective children, goitre, school hygiene, teeth, ear disease and hearing, employment of children, infective and contagious diseases, nervousness, home, social and industrial conditions, height and weight, brain and spinal cord, skin affections, tuberculosis, speech defects, open-air schools, artificial sunlight.

Investigation, Sir GEORGE remarks, reacts favourably on the general level of the quality of the work in the service. The keen man who undertakes investigation work is likely in consequence to do better routine work, and the better the routine work, the more likely will problems for investigation arise in the course of such work. To such a worker investigation comes in his stride. It neither can nor should be avoided.

VITAMIN A AND INFECTION

THERE has been a good deal of argument as to whether it is justifiable to call vitamin A "anti-infective," and (as we have lately insisted[1]) some of the discussion has gone beyond the probabilities. What then is the evidence? It is quite clear that in rats a well-defined partial deficiency of vitamin A conduces to a cornification of the mucous membrane which permits the entrance of infections in various parts of the body; and this does not happen with other vitamin deficiencies. So far the facts are scarcely in dispute. But when we seek the analogue for these infections in the human being, we reach a point where opinions conspicuously differ. It was hoped at first that puerperal sepsis and the commoner respiratory infections of infants and young children would prove to be the analogues, and that with a more abundant supply of vitamin A their incidence would be much reduced. So far as respiratory infection is concerned, however, this hope has not been realised. A number of large-scale trials have been made in which groups of children, generally in institutions, have been treated with cod-liver oil, carotene, halibut-liver oil, or some form of vitamin-A concentrate, and compared with similar groups untreated. But the results have been consistently disappointing, and the two most recently reported have only the same story to tell. In his Ingleby lecture at Birmingham last July, Prof. A. F. HESS described the observations made by himself and his colleagues[2] at the Hebrew Infant Asylum, New York, among children under 3. The treated and untreated groups each contained about 70 babies, carefully selected to be comparable in age, and the observation was made over the winter. The result was negative, the group treated with vitamin A being no less subject to infections than the control group, and a further test, carried out over the summer, when infections were milder, yielded the same answer. Hess concludes that "*there is no clinical basis for considering or designating vitamin A the anti-infective vitamin.*" The other investigation recently recorded was made by Dr. Robert Sutherland,[3] in the winter of 1931–32, at the North School, Peterhead, which is frequented by very poor children. One group of 281 children received two Radiostoleum capsules daily, while another group of 294 got control capsules of arachis oil. Sutherland's study is very elaborate and includes observations of a great number of points in connexion with health by which the true comparability of the two groups was carefully established. But although the children receiving radiostoleum did show a slight superiority in growth, he sums up by saying: "No definite evidence of diminished susceptibility to infection or of increased resistance to established disease has been found in the radiostoleum group considered as a whole."

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[1] See THE LANCET, 1932, ii., 1238.
[2] Public Health, November, 1933, p. 50.
[3] The Health of the School Child. Report for the year 1932. H.M. Stat. Office. Pp. 178. 2s. 6d.

[1] THE LANCET, August 19th, 1933, p. 426.
[2] Hess, A. F., Lewis, J. M., and Barenberg, L. H.: Jour. Amer. Med. Assoc., August 26th, 1933, p. 657.

These two inquiries, with others equally disappointing, leave little doubt that the incidence of respiratory illness amongst the ordinary child population of Great Britain or the United States cannot be lowered by prophylactic treatment with vitamin A; for this class of disease vitamin A is certainly not an anti-infective vitamin. And on reflection one is able to see that the hope was likely to be vain, for a comparison was being made between two states which were not truly analogous. The rat, when it develops infections due to vitamin-A insufficiency, is already very definitely depleted of vitamin A, though not completely so, and its eyes can easily be seen to be abnormal. The Peterhead school-child, on the other hand, is not in such a condition; night blindness, one of the earliest signs of vitamin-A deficiency, is certainly not common. When, however, a child really is depleted of vitamin A, as in C. E. Bloch's famous series of cases, reported in 1921, it is intensely susceptible to infection, and readily succumbs to it. O. Blegvad (1924), for instance, mentions that in children suffering from keratomalacia, the cause of death is nearly always broncho-pneumonia: in a series of 60 cases of keratomalacia, 46 died from this cause, while enteritis, pyelitis, and nephrolithiasis also occurred. These are the infections in man which are truly analogous with those in the A-deficient rat, and it is in these circumstances that, both for man and rat, vitamin A is truly an anti-infective vitamin.

When we do find evidence that vitamin-A therapy has influenced the course of infection there is usually a probability that, through disease or some special cause, the body's reserves of vitamin A had been brought so low that the mucous membranes were damaged and thus made vulnerable. It may well be that women under the drain of pregnancy get near this level; and Prof. E. Mellanby, in the Lloyd-Roberts lecture which we publish this week, points out that when a group of 275 pregnant women was treated with vitamin A before delivery their morbidity-rate was lower than that of controls—to a statistically significant degree. In South Africa, where native mine-workers are notoriously subject to pneumonia, administration of vitamin A after onset of the disease was not found of any value, but there was at least an indication that the mean vitamin-A reserves in the liver of those dying from pneumonia was lower than in controls dying from accident.[4] Indeed, F. W. Fox,[5] coördinating his own South African figures with those given by L. K. Wolff and by T. Moore in our columns, believes that "there is no longer any doubt that persons dying of pneumonia tend to have lower reserves of vitamin in their livers than those who have died from accidental causes." In this connexion, it may be mentioned that the London County Council's report on measles, reviewed in our issue of Oct. 28th, mentions (p. 91) a series of 300 cases of measles treated with a concentrate of vitamins A and D, in which the total deaths—almost all from pneumonia—numbered only 11, whereas in a control untreated group there were 26. In each of these three instances—puerperal sepsis, pneumonia in native mine-workers, and pneumonia complicating measles—there is a possibility that the vitamin-A reserves of the patient were so depleted, for one reason or another, that the soil was made ready for the seeds of disease to germinate. In this sense and for such cases vitamin A may be the anti-infective vitamin. With common colds and the milder respiratory diseases of infants and young children, however, there is no indication that lack of this accessory factor is an essential part of the preparation of the soil. It may be that here some other factor plays an important part—an insufficiency of iron for instance, as Prof. Mellanby suggests. But it does now seem regrettably certain that vitamin A does little or nothing to prevent the everyday respiratory infections.

DOMESTIC WATER PIPES

From early times water has been distributed from the mains in pipes made of lead, one of the most poisonous of metals. Its great ductility and the ease with which joints can be soldered specially fit it for the tortuous system needed to carry a supply of water into various parts of a house. As large towns have, in the main, grown up on the banks of rivers whose water contains calcium bicarbonate from the limestone or chalk strata through which it has passed, no ill-effects have as a rule been observed. The state of affairs became very different when some of the northern towns, seeking a purer supply outside their own borders, began to draw on upland sources yielding very soft water. Dr. R. P. Williams has told the story in a lecture at King's College, published in our issue of Oct. 28th (p. 990). It is remarkable that distilled water or water containing so little mineral matter as closely to approach it in solid content—moorland water contains about four parts per 100,000—should have the power of dissolving lead so rapidly.

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[3] Sutherland, R.: M.D. Thesis, Univ. of Aberdeen, 1933.

[4] Orenstein, A. J., and Fox, F. W.: S. African Med. Jour., 1932, vi., 685 and 689.

[5] Fox, F. W.: THE LANCET, 1933, i., 953.

Distilled water in contact with sheet lead for an hour or less takes up sufficient of the metal as hydroxide to give a strong reaction with chromate ; this is however soon precipitated as carbonate, which is only very sparingly soluble in water but much more soluble in the gastric juice. For solution to occur the water must contain dissolved oxygen or be exposed to the air, whence the carbonic acid which precipitates the lead when dissolved is also derived. Pure lead can be kept without tarnishing under oxygen-free water, but this condition cannot be ensured in waterworks practice. Fortunately, if the water contains appreciable amounts of carbonates, sulphates, or silicates the solution of lead soon ceases.

The explanation seems to us something like this :—

> Lead like most other metals is appreciably, although very slightly, soluble in water ; witness the oligodynamic action of silver and of copper on bacteria and green growths in water. In the presence of anything, like oxygen, which will form with the ions at the surface a compound more soluble than lead itself, the chemical action goes on until a saturated solution—in this case of lead hydroxide—is formed. If however the water contains ions which will form less soluble lead compounds, the lead ions which tend to leave the surface of the metal remain anchored to it and form a protective coating of carbonate, sulphate, and/or silicate. But this protective action occurs only when the proportion of ions forming these sparingly soluble lead compounds is sufficient to depress the solubility of the lead salts, in accordance with the law of mass action by which the mutual solubility of two ions is determined by their "solubility product." For instance, a completely saturated solution of (say) lead sulphate will, on the addition of an excess of either constituent, yield a precipitate ; hence lead sulphate is less soluble in water containing calcium sulphate than it is in distilled water. When a water contains traces of free sulphuric acid, as some peaty waters may do which have been in contact with iron pyrites, lead sulphate is likely to be formed and to go into solution to saturation point, there being only a small excess of sulphate ions to depress the solubility of the lead.

The most certain way of decreasing the solvent action of water on lead is to neutralise any mineral or organic acids in it by passing it over limestone or chalk, which will dissolve in amounts sufficient to ensure the formation of a protective coating on the pipes. The addition of flint pebbles to provide a little silicate further decreases the possibility of a dangerous amount of lead getting into the water. The amounts dissolved are in any case of course very small, but one part of lead in two millions of water is dangerous—in fact, any detectable amount should be considered as too much, since lead is only very slowly eliminated from the body.

Prof. L. S. P. Davidson, with his collaborators, has recently described in our columns[1] an outbreak of lead poisoning in the north-east of Scotland, which was investigated by him and a group of colleagues. The facts are disturbing. Supplies of water, presumably mostly from private sources, were conveyed to houses by long lengths of lead piping, and the lead content of the water first run off after the pipes had stood full for a time was sufficient to explain the many cases of lead poisoning among the inhabitants. Having regard to the almost general use of lead for water pipes it seems incumbent on public water authorities to render their supplies incapable of dissolving lead. If this cannot be done other materials must be used for the pipes. Prof. Davidson suggests the replacement of lead pipes by iron. This might give rise to the need for frequent renewal and complaints of chalybeate tastes in the water. Galvanised pipes yield zinc to some waters, and although not very poisonous zinc salts have an unpleasant flavour. Lead pipes coated internally with tin are available. But tin is the most expensive of the base metals and although well-coated tin-lined pipes would be absolutely satisfactory—tinned vessels have long been used for many years for culinary purposes—if the coating is not continuous the danger is still present, for, if tin and lead are left in contact in a plumbosolvent water, lead rapidly goes into solution. Copper pipes are satisfactory, but have the drawback of being more difficult to install than the easily bent and soldered lead ; copper is the noblest of the base metals and the small traces of copper which might go into solution would, as Houston pointed out, have no harmful effect on water drinkers. Copper is in fact an essential constituent of the tissues. Another alternative is the new triple alloy of lead, tin, and cadmium, recently commended by the Non-Ferrous Metals Research Association, which seems to yield rather less lead to water than does lead itself. Its use has been sanctioned in Manchester, but it should not be forgotten that cadmium is a very poisonous metal. Private users of soft water would, it seems, be well advised to incur the rather heavy initial expense of copper or well-tinned piping.

CEREBRAL ANGIOGRAPHY

It is now five years since Prof. Moniz, of Lisbon, began to study the radiological appearances of the cerebral blood-vessels after injection of opaque solutions into the carotid artery.[1] On another page will be found illustrations of normal and abnormal positions of vessels revealed in typical cases, with the conclusions which Moniz's extensive experience has enabled him to draw from their inspection. His studies have revealed important new anatomical and physiological facts. The radiograms show that the internal carotid artery within the skull curves in a manner more complicated than has been hitherto described by anatomists. It is likely that the single or double curve, which Moniz calls the carotid syphon, plays a considerable part in ensuring a steady non-pulsating stream of arterial blood within the cranium. By taking a series of radiograms at intervals of one second, it has been found possible to display the cerebral veins and sinuses as well as arteries, and Moniz has therefore changed the name of the procedure from arteriography to angiography. He has also been able to show that the blood circulates much faster within the brain than in its coverings, and he ttributes this to the more rapid circulation in he cerebral capillaries.

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[1] The Lancet, August 12th, p. 374.

[1] See The Lancet, 1931, i., 249: and ii., 863.

While these observations are of great interest they do not by themselves justify cerebral angiography as a method of investigation in disease. MONIZ has found, however, that the position of intracranial tumours can often be inferred from the displacement of the cerebral arteries as shown in the radiograms. He has been able precisely to localise many tumours by this means, and moreover in vascular growths the circulation n the tumour itself is often rendered visible. The displacement that can be caused respectively by temporal, parietal, and frontal tumours is clearly shown in the radiograms illustrating his communication, and there can be no doubt that surgeons would find such pictures of immense help in deciding whether the growth is likely to be accessible and from which direction it could best be approached. The risks of any such procedure, however, have to be balanced against its conveniences. In the early attempts at cerebral angiography sodium iodide solution was used as the opaque substance, but it proved to be not wholly free from danger, especially in cases of cerebral arterio-sclerosis, in four of which hemiplegia occurred. In thorotrast MONIZ claims to have found a safe medium. It is not excreted but is absorbed by the reticulo-endothelial system, and presumably may remain in the body over a considerable period. Thus some time must elapse before we can be certain that its presence will not ultimately do harm, but as regards the absence of immediate effects, the experience of MONIZ is confirmed by that of other workers who have used it.

It is doubtful whether cerebral angiography will replace ventriculography as the main accessory method available to clinicians in the diagnosis of intracranial tumours; but in certain special cases, as for example vascular tumours, angiomatous malformations, and intracranial aneurysms, it seems to give more precise information than can be obtained in any other way, and for this reason it is likely to secure a permanent place in the methods of investigating cerebral lesions.

ANNOTATIONS

"PART TWO POISONS"

THE Home Secretary has appointed Sir Gerald Bellhouse to be chairman of the Poisons Board, whose duties are to prepare a list of substances to be treated as poisons for the purposes of the Pharmacy and Poisons Act, 1933. The constitution of the Board is given in our news columns. Lecturing to the Exeter and District Branch of the Pharmaceutical Society on Nov. 15th, Mr. H. Wippell Gadd discussed the new Act and observed that the paramount aim of all such legislation, and the standard by which it must be judged, is its effect upon the public health and safety. He explained the new system of a Poisons List divided into two parts which will not correspond with the two parts of the present schedule of poisons. The prospective "Part I. Poisons" will be those which only "authorised sellers of poisons" may sell; the "Part II. Poisons" will be saleable by other traders besides authorised sellers of poisons. Local authorities are to keep lists of these other traders and the Home Secretary may make rules as to appeals by persons aggrieved at the local authority's refusal to enter their names in the list. It would seem that anybody may have his name entered on the list unless the local authority has sufficient ground of refusal by reason of something known against him personally or against his premises. Mr. Gadd observed that this arrangement provides a much wider concession to non-qualified retailers than the old system of licensing under Section 2 of the 1908 Act. He hoped that local authorities would not be allowed to include in their lists the names of any traders who keep food shops or who, for personal reasons or on account of the nature of their premises or the character of their business, are obviously unfitted to sell poisons. He insisted that, in the interests of public safety, local authorities' lists of sellers of "Part II. Poisons" must be restricted and also that the list of those poisons must be curtailed. The Act says that in determining the distribution of poisons as between Part I. and Part II., regard must be had to the desirability of confining Part II. to "articles which are in common use or likely to come into common use for purposes other than the treatment of human ailments and which it is reasonably necessary to include in the said Part II. if the public are to have adequate facilities for obtaining them." Mr. Gadd urged that, in these times of commercial enterprise and easy and rapid means of communication and transport, it is difficult to name any poison in common use which the public have not adequate facilities for obtaining in all parts of the country; there were many poisonous substances which, if sold in ordinary shops by persons with only an elementary knowledge of their properties, would become a grave public danger.

The Departmental Committee on the Poisons and Pharmacy Acts, whose report in 1930 paved the way for the recent alteration of the law, contemplated that the new "Part II. Poisons" would include poisonous preparations used for sanitary, industrial, horticultural or agricultural purposes or as sheep-dips or vermin killers. They realised that the sale of disinfectants was an important matter of policy. The average purchaser of disinfectants for domestic and kindred purposes, they said, instead of going to a chemist and obtaining a really effective article (which, because it was a poison, he could not get elsewhere) inclined to buy from a grocer or general dealer an inferior article bearing perhaps the same or a similar name, not a "poison" but also not an efficient disinfectant. Home Office witnesses pointed out to the committee that, in a recent case of alleged murder, arsenic ostensibly for horticultural purposes had been supplied direct to the purchaser by a wholesale dealer with the result that detection was hampered by the absence of a record of the sale. The Departmental Committee believed its recommendations met all difficulties but important reservations were made by Mr. Arthur E. Young, chairman of the Retail Pharmacists' Union. Mr. Young was not prepared to agree that the creation of a new class of vendors (of the proposed "Part II. Poisons") was in any sense necessary or in the public interest. Before the passing of the 1908 Act, he said, it had been pleaded that in remote areas in Scotland the agriculturalist requiring poisons for use in his industry was under some hardship. The 1908 Act allowed the licensing of sellers of agricultural poisons but directed that the satisfaction of the reasonable requirements of possible purchasers should be one of the considerations in granting licences. In spite of that intended limitation, hundreds of licences had been granted in urban areas, even in close proximity to chemists' shops. It is common knowledge that in many cases of the criminal use of poison the substance has been obtained in the form of agricultural or horticultural preparations. Mr. Young was entitled to protest in 1930, and Mr. Wippell Gadd to-day, that the new law confirms and even extends the wide concession which non-qualified vendors have managed to obtain. Parliament has sanctioned the change but public opinion may succeed in keeping its operation within proper limits.

CARDIOVASCULAR SYPHILIS

MODERN developments in radiology have made it possible to diagnose syphilis of the cardiovascular system more often and at an earlier stage than formerly; by means of X rays it has become possible to recognise an early dilatation of the ascending aorta and arch, to which part of the system syphilitic lesions are largely confined. Dr. O. Brenner[1] reports a series of cases in which the findings, both before and after death, are closely comparable with those of other observers. Of 102 patients, 50 showed aortic incompetence, 28 aneurysm, 14 both these lesions, and 10 neither of them. As is the ordinary experience, the usual order of appearance of symptoms was dyspnœa, angina, congestive failure; and in about 9 per cent. of cases physical signs were discovered accidentally when there were no symptoms referable to the circulatory system. Angina, commonly nocturnal, was recorded in 43 per cent., in more than half of which the aortic valve was incompetent. In a few of the cases of angina, however, aneurysm alone was found at autopsy, there being no evidence of aortic incompetence or coronary obstruction. Congestive failure is a late and grave manifestation. With it the normal rhythm of the heart is preserved, auricular fibrillation being remarkably rare in cardiovascular syphilis. Aortic incompetence was the lesion most often associated with congestive failure; in other cases coronary orifice obstruction, coexisting coronary atheroma, and aneurysm were found. Some patients with failure showed neither coronary lesions nor aortic incompetence, and in these cases there was no clear evidence that hypertension was a factor. When congestion has made its appearance the outlook is extremely bad and survival for more than a few months unlikely.

Treatment of the symptoms of cardiovascular syphilis does not differ from the treatment of the same symptoms arising from other forms of heart disease. Specific treatment designed to arrest the syphilitic process in the aorta and its valve should be cautiously used, and in the presence of angina or congestion, the intravenous arsenicals should not be given. Otherwise they may be used in small doses after an initial period of two or three months' treatment with iodide, mercury, and bismuth. There is evidence that such remedies give relief from symptoms and increase the duration of life.

HEALTH OF THE NAVY ONE HUNDRED YEARS AGO

AN interesting article by Surgeon-Captain Pickering Pick, R.N., will be found in the last quarterly issue of the Journal of the Royal Naval Medical Service. The actual period selected by Surgeon-Captain Pick for comment is the six months from April to September, 1838, at which time the state of the medical department of the Navy was receiving conspicuous attention in THE LANCET and his article is inspired by Wakley's characteristic freedom of speech. Surgeon-Captain Pick quotes statements showing that an invidious social distinction pursued naval medical officers in their career when they certainly deserved every support in their hard and ill-paid duties. When dealing with the high mortality in the Service and the conditions of rank, pay, and promotion existing among the medical officers, Wakley showed that in the list of assistant surgeons between the years 1827 and 1834 there was a loss amounting to nearly 5½ per cent. annually from death or dismissal, while the promotions in the same years amounted to 4 per cent. The figures at the time they were published were substantiated from other returns, and apparently the death-rate of these officers was three times that of the ordinary population. The question emerged in Wakley's words "what will a man give in exchange for his life, for 3*s*. 6*d*. a day, and the prospect of never being made a surgeon?"

The interests of naval medical officers 100 years ago were brought to the attention of the medical profession and to that of their seniors in the Service with remarkable force in our editorial articles, and correspondence to be found in the second volume of THE LANCET for 1837–38 makes striking reading; but although conditions to-day are so profoundly altered there is, and there always will be, room for improvement.

THE EARLY OCCURRENCE OF NERVOUS LESIONS IN POLIOMYELITIS

THE efficacy of convalescent or of pooled adult serum in the treatment of poliomyelitis is still a matter of controversy, and the burden of proof is on those who still believe that this method significantly lowers the frequency or severity of paralysis.[1] The final verdict must be given on empirical trial, but our views as to how far that trial should extend will clearly be influenced by any ancillary evidence that may become available. A finding that has an obvious bearing on the main issue has recently been recorded by Kramer and Parker.[2] These workers, having available a strain of poliomyelitis virus that was known to be infective when administered by the nasopharyngeal route, inoculated six *Macacus rhesus* monkeys intranasally on each of three successive days with a suspension of virus-containing cord. The animals were kept under careful and continuous observation, temperatures being taken twice daily. One monkey was killed on the day following the third injection of virus, and one on each day thereafter until all six had been killed. Sections of the brain and cord were cut and examined in every case. The first two animals killed had shown no signs of illness and no rise in temperature, but the brain and cord showed definite signs of involvement, including œdema of the pia, œdema and congestion of the cord, infiltration of the grey matter, areas of hæmorrhage, and occasional chromatolysis and neuronophagia of the ganglion cells. The monkey killed on the third day after the last intranasal injection showed no signs of illness, but had a raised temperature for some hours before it was killed. The involvement of the brain and cord revealed by histological examination was of the same kind as that found in the other cases, but more advanced. The monkey killed on the fourth day had had a raised temperature for 24 hours, and showed a mild tremor that became evident only on extreme exertion. The fifth and sixth monkeys showed the typical paralytic symptoms.

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[1] Birmingham Med. Rev., Sept., 1933, p. 161.

[1] See THE LANCET, 1932, ii., 1063; 1933, i., 1352; 1933, ii., 420.

[2] Proc. Soc. Exp. Biol. and Med., 1933, xxx., 1417.

The central nervous system of each of these last three monkeys showed the characteristic changes of poliomyelitis.

As the authors point out, the presence of definite nervous lesions so soon after the intranasal administration of virus, and 48 hours or more before any clinical manifestation of illness, suggests that convalescent serum given after such symptoms have appeared, but before paralysis has supervened, is unlikely to have any very significant protective effect. If these findings are confirmed by subsequent workers they will clearly have to be regarded as adverse to the case for convalescent-serum therapy.

SCIENTIFIC STUDIES AT CAMBRIDGE

A REPORT of progress in the Cambridge academic year ending September, 1933, has been issued in connexion with the Rockefeller scheme for the building of the new University library and for the promotion of the study of the physical and biological sciences. From the combined resources of the Rockefeller endowment fund and the Plummer Fund large grants were made during the year towards the endowments, but the University has still to collect over £50,000 for the advancement of the scheme for physical and biological sciences; in response to the collection of this sum by the University, £105,000 will be received from the International Education Board. A special feature of the report is the note on the scheme for the new zoological laboratory, the building for which is rising rapidly, though it is probable that it will not be complete for another year. Old graduates in medicine will realise the site of the building from the description given in the report, and may be a little surprised to see that the name of the great Humphry should be misspelt in a document emanating from the Cambridge University Association.

RADIODERMATITIS AND CANCER

CLINICAL observation of the development of cancer of the skin among radiologists has prompted Dr. Antoine Béclère [1] to discuss the genesis of this condition in relation to the cancer problem as a whole. Before seeking to discover the essential cause of cancer we may ask ourselves, he says, whether it should be included among the pathological affections of external or internal origin. It is generally accepted at the present time that the various mechanical, chemical, and physical agents, and the parasites which cause cancer, do so by acting as chronic irritants setting up a chronic inflammation. As the multiplicity and diversity of these agents precludes specificity of action, further analysis of the problem—according to Béclère—depends upon the answer to the question whether alterations which result from their action stir up properties originally inherent in the injured cells or whether the condition which has been brought about favours the intervention of yet another unknown factor. According to the first hypothesis the development of cancer is the ultimate link in a long chain of uninterrupted events beginning with inflammation and going on to progressive hyperplasia. But in Béclère's view clinical study of radiologist's cancer does not lend support to continuity in the development of the process. He sees the onset of malignant change as a strange accidental event superimposed on various non-specific lesions as though suddenly a new factor had been added to the already injured skin. His reasons are first that this form of cancer occurs in only a small minority of very numerous people whose skin has been affected. Secondly, there is no parallelism between the severity of the cutaneous lesions and the appearance or absence of cancer. Finally, close examination of the actual skin lesion in no way supports a theory of chronic irritation followed by inflammation nor a gradual progressive hyperplasia ending in malignancy. The affected skin is in fact atrophic. It is silky or glossy and thin; has lost hair follicles, sebaceous and sweat glands. The general effect is of a devitalised rather than a stimulated or irritated organ provided, of course, that no complicating injury or infection is present. Radiodermatitis is in fact not an essential part of the process. When cancer develops it starts many months, or years even, after exposure, as a small circumscribed ulcer or warty excrescence at one particular spot in a relatively vast expanse of atrophic skin, every part of which appears on microscopic examination as well as to the naked eye to be identical. What is it that determines this localised origin, or predilection as it were, of malignant change for any one particular spot? Béclère postulates an additional factor of external origin—whose action is favoured by pre-existing changes. What he has once more stated is that cancer has a focal origin. Tarred mice demonstrate the same fact. Warts develop from single or multiple points of origin in a large expanse of apparently identical atrophic skin. This is one of the knotty points and stumbling-blocks of most cancer theories. In experimental skin tumours of mice and men it is not unreasonable to call in some additional external factor to account for this focal origin, but as an explanation of the focal origin of internal, spontaneously occurring, tumours it is less satisfactory.

PROPRIETARY HOSPITALS

IN the United States of America there are about 7000 hospitals with 1,000,000 beds representing a capital expenditure on land, buildings, and equipment of over £625,000,000. Apparently about 27 per cent. of the hospitals, including some of the largest, are owned by the central or local government authorities; they provide accommodation for persons whose segregation is desirable in the public interest—cases of communicable disease, including tuberculosis, and of mental disease—and also for soldiers, sailors, war veterans, and the destitute. With few exceptions these institutions do not receive paying patients. Nearly 40 per cent. of the remainder are non-profit, or charitable institutions, although most of them have a large proportion of paying patients; in many the fees paid amount to at least half the current expenses. Besides these there are about 2440 proprietary hospitals organised on a business basis, the profits, if any, accruing to the persons providing the capital invested. The majority of these proprietary hospitals, which are to be found chiefly in the smaller towns of the southern and western States, are owned by individuals or partnerships, but nearly 600 belong to companies formed for the purpose of providing a hospital. The proprietary hospital is usually small (the average number of beds is not more than 30), and provides general medical and surgical care; a few limit themselves to some special kind of treatment. Not infrequently it is owned and managed by a medical practitioner, and in a considerable number of cases it forms an annexe to the practitioner's consulting-room or "office." It is intended for patients who can afford to pay the cost of hospital services, and is used mainly for cases of acute illness. Non-paying patients are not admitted, but free first-aid treatment is given in cases of emergency. Unlike the charitable hospital it is not exempt from taxation.

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[1] Bull. de l'Acad. de Méd., 1933, cx., 156.

The arrangements for admitting a patient to a proprietary hospital are usually made by the attendant practitioner, who after consultation with the patient or his friends, engages a bed at an agreed rate, which does not include special services, such as X ray work, tests for basal metabolism, or the like. Payments for ordinary hospital services are often required to be made weekly in advance, whereas the bills of the doctors who treat the hospital patients are not usually presented till the treatment has been completed. The patient has thus two bills to pay: the first, that of the hospital, the second, that of the doctor; and of the two the latter is the least likely to be paid in full, especially if the hospital charges have been unexpectedly heavy. Occasionally unedifying disputes arise between the hospital and the doctor as to the adjustment of their respective charges. Still more unedifying is the arrangement, which is said to obtain in some hospitals, whereby a doctor who has recommended a patient to enter a certain hospital receives by way of commission a part of the hospital charges paid by the patient. Such arrangements, which are of the nature of fee-splitting, are strongly condemned by representative organs of medical opinion in America, and various methods have been suggested to discourage them and to enforce a higher standard of ethical practice. Largely for this purpose an incorporated organisation has recently been established in New York, known as the Association of Private Hospitals Inc., members of which sign a pledge to "(*a*) maintain the highest efficiency in our service; (*b*) maintain an open hospital to which accredited physicians and surgeons may send patients . . . ; (*c*) do everything in our power to combat the evils of fee-splitting among the physicians and surgeons working in our institution." The hospital authorities pledge themselves also not to rebate any part of a patient's hospital charges to the doctor attending him.

THE EFFECTS OF POSTURE ON HEART-RATE AND BLOOD PRESSURE

THE changes in pulse-rate and blood pressure which accompany alterations of posture have usually been attributed to concomitant variations in the cranial and splanchnic blood pressure, but Prof. J. A. MacWilliam[1] reports observations which cannot be thus explained. It is now recognised that other mechanisms are concerned in the regulation of pulse-rate and blood pressure—notably afferent impulses from the vena cava and right heart, which are generated when the internal pressure increases and causes the heart to beat faster, and also afferent impulses from the carotid sinus produced by increase in pressure within the artery and leading to cardiac slowing. MacWilliam finds that the chief effects of carotid sinus pressure in the normal person are slowing of the pulse, weakening of its beats, fall in blood pressure, and weakening of the heart and arterial sounds. The readiness with which these reactions are evoked seemed to vary considerably during the course of the day and also from day to day; indeed, during a single day the sensitiveness of the reflex may alternate several times, though one of its most constant features was the activity of the reflex on waking in the morning. Variation in the effect of change of posture on pulse-rate may perhaps be associated with different phases of activity of the carotid reflex. An exaggerated carotid reflex, in conjunction with a similar response from the vasomotor centre, may lead to over-compensation when the subject lies down; this means excessive slowing of heart-rate with fall in blood pressure and giddiness is induced. Changing from the sitting to the standing posture usually resulted in acceleration of the pulse, and MacWilliam shows this to be dependent on hydrostatic effects which occur when the thigh is moved from the horizontal to the vertical; altered tension in muscles plays no part in bringing about the change. Artificial venous congestion of a leg produces acceleration of the pulse when the subject is sitting or standing, but not when he is lying. Slight continued movements of the legs when the subject is standing brought about a definite slowing of the pulse as compared with the rate when standing motionless. These effects are presumed to result from afferent impulses from the leg, and are not the direct result of alterations in blood flow. Similarly, experiments suggest that the blood pressure adjustments which are necessary in the standing position are affected by afferent impulses from the lower limbs. In conclusion MacWilliam says that "it remains to be seen whether a study of postural effects can give information as to developing defects of coördination and control in the vascular system, leading up to conditions of persistent high or low blood pressure, and whether when abnormal levels have been established any differentiation of types is practicable."

INDUSTRIAL LEGISLATION

THE members of the Home Office Factory Inspectors Department celebrated the centenary of their establishment on Nov. 10th by a dinner which was attended by the Prince of Wales and the Home Secretary. It will be remembered that the first efforts at official control of working conditions were made in 1802 when the Health and Morals of Apprentices Act was passed. The aim of the early measures introduced was cleanliness and some limitation of the hours of labour for children, and the fixing of the age for employment at not less than nine years. These so-called "apprentices" passed their lives in the mills where they were clothed, fed, and housed; their fate was to be awakened by being beaten and to be kept awake by the same means. If they escaped, they were pursued on horseback and hauled back to work, and, maybe, to succumb to "mill fever," as typhus was then often called. The early Acts were however mostly ineffective for lack of means to enforce them, until 100 years ago State-paid inspectors of factories were appointed, armed with powers of entry into the mills and entrusted with the duty of enforcing legal requirements. These were the days when the ten-hours controversy raged and Michael Sadler said in the House "You have limited the labour of the robust negro to nine hours; but when I propose that the labour of the young white slave shall not exceed ten, the proposition is deemed extravagant." Steadily the Factory Acts were strengthened, but the cynic may note that the landowners who held all power in Parliament at the beginning of the century and resented the growing wealth of the new mill-owners, enacted the early Factory Acts as a means for keeping their rising rivals in their place; that adult male labourers strongly supported the ten-hour Act which would, it was thought, by limiting the hours of the lowly paid labour of women and children, improve their own position; and that, even in these later days, the cause of industrial welfare has often been advocated by philanthropic employers, less because of any realisation that their consideration for their workpeople is in fact a business asset, but in order that their rivals shall also be called upon to incur the expense of welfare provisions. But the encouraging fact remains that throughout the 100 years the State inspectors of factories from inside knowledge have been able to provide information and make proposals upon which progress has been based. And at the same time they have gradually come to be regarded less and less as inquisitorial prosecutors and more and more as friends and advisers. Gone are the days of such abuses as "time-cribbing," when mill machinery was run for a few minutes before and after the legal limit, while scouts watched for a possible raid by an inspector who in his turn would conceal himself in some tradesman's cart or maybe in a passing hearse. To-day employers seek advice regarding rest pauses and the length of shifts, appreciate the human factor in accident causation, and inquire about the best ways of removing dangerous dust and fumes. Meanwhile protective legislation, notwithstanding eddies and backwaters, flows steadily onward to its objective, and is being extended well beyond the bounds of factories. The urgent need of legislation to limit the hours of boys and girls in distributive trades and in hotels, restaurants, and eating-houses is now being considered by the Home Secretary, whose sympathetic answer last week to the chairman of the Committee on Wage Earning Children gave much satisfaction. The long hours during which these young people are on duty is generally deplored, and it may be hoped that the negotiations now in progress between the Government and the interests concerned will have a useful and speedy outcome.

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[1] Quart. Jour. Exper. Physiol., 1933, xxiii., 1.

SINUSITIS IN SCARLET FEVER

Otitis media is one of the common complications of scarlet fever and according to G. D. Hoople and L. S. Cave[1] is usually accompanied by sinusitis. Two series of cases were studied in the City Hospital, Syracuse, New York. In the first, the sinuses of 292 scarlet fever patients were examined with X rays and results were obtained which prompted further investigation. In the second group, comprising 80 patients, examinations were made on admission by a pædiatrist, A. C. Silverman, by Hoople and Cave as otolaryngologists, and, as soon as possible, by a radiologist, D. S. Childs. The findings were recorded independently, being compared later, and similar examinations were made just before the patient's release from hospital. Those examined were fair samples, as regards age- and sex-incidence and seasonal distribution, of the cases of scarlet fever occurring in the city as a whole. Radiograms were described as "clear" when no shadow could be made out in the sinuses, and as "thickened membrane" when there was a shadow in one or more of the sinuses not dense enough to be placed in the third category of "retained secretion." In the first series, 91 per cent. of the cases showed some shadow in the sinuses, most of these being interpreted as thickened membrane. In only 9 per cent. were all the sinuses clear. Most often involved was the antrum, and next in order the ethmoidal and frontal sinuses. The sphenoidal sinus was not examined. Of the 292 patients, 33 (11·3 per cent.) had otitis media and all of these had sinus involvement on the corresponding side; indeed, in 26 of the 33 cases there were bilateral shadows even if only one ear was involved. In the second series of 80 cases, which contained only 7·5 per cent. of severe clinical types of scarlet fever as compared with 20 per cent. in the first, 91 per cent. showed radiographic evidence of sinus involvement. On admission 12 films were clear (11 of these patients were over seven years of age), 61 showed thickened membrane, and 7 retained secretion. On discharge from hospital these figures became 22, 56, and 2 respectively. Patients from whom "clear" films were obtained on admission showed clinical evidence of sinusitis in 7 instances; in the "thickened membrane" group there was clinical evidence in 46; and in the "retained secretion" group in 4 patients. In explanation of the discrepancies between the radiological and clinical findings Hoople and Cave point out that the examinations were made at different times and that clinical evidence of sinusitis present on one day may be lacking on another. In the second series 12 patients (15 per cent.) had otitis media and in only two of these was there no *clinical* evidence of sinusitis. Incidentally it was found that the incidence of sinusitis was proportionately greater in tonsillectomised patients. Another question considered is the relation of sinusitis to contact ("return") cases. The investigators point out that if all patients with sinusitis at the time of discharge from hospital were possible sources of infection the number of contact cases would be very high. It may be, they think, that the thickened membrane represents only a residual reaction to the past infection, "something that will subside in a few days." In any case they suggest careful clinical scrutiny aided by radiograms of the sinuses before release of the patient from hospital. No special treatment was adopted for sinusitis. As little as possible was done in the acute stages and it was found that little had to be done later on.

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[1] Jour. Amer. Med. Assoc., Oct. 7th, p. 1121.

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Dr. Charles Slater has given to St. George's Hospital £10,000 with which to build a new clinical laboratory at a fitting time, the interest to be used meanwhile for the support of the existent laboratory.

Sir Leonard Rogers, F.R.S., I.M.S., retired on Tuesday from his position as medical adviser to the Secretary of State for India and president of the India Office Medical Board, having reached the age limit. He has been succeeded by Sir John Megaw, director-general of the Indian Medical Service. Sir Leonard Rogers will continue his research and his work for the British Empire Leprosy Relief Association.

Dr. M. H. MacKeith, Fellow of Magdalen College, Oxford, has been appointed dean of the new British Post-Graduate Medical School at Hammersmith, and will take up his duties there in the new year. Dr. MacKeith qualified from Guy's Hospital in 1921, and is at present demonstrator of pharmacology and dean of the medical school in the University of Oxford. The governing body of the school at Hammersmith announce their hope that it will be open to students towards the end of 1934.

Dr. John Beattie, who has been appointed, in succession to Sir Arthur Keith, Conservator of the Museum and Director of Research at the Royal College of Surgeons of England, is associate professor of anatomy at McGill University, Montreal. Dr. Beattie, who is 34 years old, was educated at the Royal Academic Institute, Belfast, and qualified with first-class honours from Queen's College in 1923, taking the gold medal at the M.D. examination in 1927. He is also M.Sc. and D.Sc. of Belfast University. He has been research assistant and demonstrator of anatomy at University College, London, and in 1925 held the Mackay Wilson Travelling Scholarship. His recent published papers bear on the hypothalamic mechanism and the tuber cinereum.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

VI.—PREVENTION OF DISEASE IN THE PRE-SCHOOL CHILD

If we are prepared to accept, with Sir Arthur Newsholme, that the curtailment of illness and the decrease of suffering come within the scope of preventive medicine, we find that preventive and clinical medicine have a common meeting ground, and are in fact inseparable. Taking this broad view of preventive medicine, there are several ways in which a doctor may practise the preventive aspect of his calling.

The first and most desirable form of prevention is to advise a patient on such lines as shall forestall the appearance of disease; we see an example of this in infancy in the administration of orange juice as a prophylactic measure against infantile scurvy, or in the use of cod-liver oil to prevent rickets. Secondly, a course of treatment may be recommended in order to create in the patient a specific immunity to certain diseases; examples of this in childhood are vaccination against small-pox and immunisation against diphtheria. Thirdly, by diagnosing disease in its initial stages it may be possible to begin treatment early enough to thwart the natural course of the disease and alter the prognosis vastly for the better. The importance of early diagnosis in the illnesses of childhood may be illustrated by diphtheria, in which the prognosis is materially affected by the time that elapses between the first appearance of the infection and the administration of anti-diphtheritic serum; and by hypertrophic pyloric stenosis, in which the recovery-rate varies inversely as the time that elapses between the onset of symptoms and the institution of proper treatment. Fourthly, when a disease has already established itself, the avoidance of complications and sequelæ is a preventive measure of much importance. Thus the thorough treatment of acute infections of the throat and ear will do much to prevent conditions such as chronic nasal catarrh and otorrhœa, while a period of good convalescence at the seaside or in the country after measles, whooping-cough, or broncho-pneumonia is invaluable as a means of preventing the chronic pulmonary catarrh which so often follows these diseases.

SORE-THROAT

Turning now to some of the common ailments of young children I mention sore-throats first, because it so often happens that chronic disorders such as otorrhœa, catarrhal rhinitis, and recurrent bronchitis owe their origin to repeated infections of the pharynx.

The term "sore-throat" has been used intentionally instead of tonsillitis because a sore-throat may readily occur after the tonsils have been removed, and because a day or two of fever with swelling and redness of the pharynx may be almost as fruitful a source of complications as a more frank tonsillitis. There is no means of estimating the incidence of sore-throats among children, because they are often mild enough scarcely to give rise to symptoms, and so pass unnoticed, while parents are apt to look upon them as something inevitable but on the whole harmless, and so medical advice is not sought.

It is often surprising how slight may be the symptoms when examination shows considerable inflammation of the throat. A young child is not likely to complain of soreness, and while there may be vomiting and anorexia these are not to be relied upon. The temperature is, however, invariably raised a few degrees, and it is only by making a routine examination of the throat in all children who are found to be feverish that sore-throats will not be overlooked. In the milder infections the temperature may return to normal within 24 hours, and even when there is a purulent exudation on the tonsils the temperature should fall sharply to normal within 72 hours. If this does not happen, it should be a warning that some complication is brewing, such as, for example, a peritonsillar abscess, suppuration in the cervical glands, or acute otitis media, and the child should be carefully watched so that these complications may be dealt with at the earliest opportunity, and the more chronic results of neglected sore-throats (otorrhœa, chronic nasal catarrh, and so forth) may be prevented.

At the present time, what happens too often to the pre-school child is that if the sore-throat is treated at all, it is dealt with by home remedies, often with the child up and about the house and mixing with other children, instead of being in bed. Delayed and imperfect recovery is a common result, complications arise more readily and are likely to be overlooked, and by the time the child begins schooling and undergoes his first medical inspection by the school medical service he is already suffering from chronic ill-health.

The complications already mentioned come about from direct spread of the infection from the throat to neighbouring tissues, but not less important are the complications that arise from one to three weeks after the throat infection, and appear in distant parts of the body.

The two most important are nephritis and acute rheumatism. The appearance of blood in the urine or puffiness of the face will bring the nephritic child quickly under medical care, but this is not the case with acute rheumatism, unless it should happen that the joints are acutely involved. Figures from the rheumatism clinic at the Hospital for Sick Children, Great Ormond-street, showed that the onset of heart disease passed unnoticed in 13 per cent. of the children with rheumatic carditis, and the state of the heart was only noticed on routine examination after the damage had already been done. One cannot doubt that some at any rate—and perhaps the majority—of these followed sore-throats, and if medical advice had been sought at the time and the illness of that throat had been properly followed up, much damage to the heart might have been avoided. It may be mentioned here that experience at the special convalescent homes for rheumatic children has shown that the degree of the inflammation of the throat is no guide as to the likelihood of rheumatic sequelæ, severe carditis being often a sequel to a relatively mild faucial inflammation.

It has long been recognised that the onset of rheumatic heart disease is often coupled with a history of tonsillitis or sore-throat. During the last few years the segregation of rheumatic children in special heart homes, where observation of the children can be carried out over long periods, has led to a better understanding of the close relation between these diseases, and B. Schlesinger (1930) and later myself (1931) have been able to show that there is generally an interval of roughly 7 to 21 days between the sore-throat and the development of acute rheumatism. During this interval the child seems well, and under the ordinary circumstances of the private house would probably pass from medical care before the rheumatic manifestations appeared.

The bacteriology of these preliminary sore-throats has been studied, and evidence is accumulating (A. F. Coburn (1931), W. R. F. Collis (1931), W. H. Bradley (1932), and Glover and Griffith (1931)) in support of the view that when rheumatic carditis follows a sore-throat, the sore-throat is the result of hæmolytic streptococcal infection.

This should occasion no surprise when it is remembered that rheumatic carditis has been recognised for years as one of the sequelæ of scarlet fever—a disease now known to be due to infection of the throat by hæmolytic streptococci.

The prevention of a disease which leads to so much invalidism as does rheumatic carditis requires no advocate, and it may well be that during the sinister period—silent of symptoms—that elapses between the sore-throat and the appearance of rheumatic manifestations, we have an opportunity to attempt preventive measures. A sore-throat in a child should be looked upon as a warning that acute rheumatism may follow, especially if the sore-throat is attributable to hæmolytic streptococcal infection. At the present day, when a throat swab is sent to the laboratory, the bacteriologist is usually asked simply to say whether diphtheria bacilli are present or not. The question should be amended to: Are diphtheria bacilli or hæmolytic streptococci present? If the report shows the presence of hæmolytic streptococci, two results should follow. Firstly, the child should be isolated (if that has not already been done) until the inflammation of the throat has disappeared and the temperature has fallen to normal; secondly, the child should be kept under medical observation for a month, in order that any cardiac involvement might be promptly realised and treated. Older children need not be kept away from school all this time, but during their month of supervision the heart should be examined at least every week, either by a private doctor or perhaps in some cases by arrangement with the school medical service. Of course rheumatism does not follow all hæmolytic streptococcal sore-throats; it only follows in about 5 per cent. of cases of scarlet fever, and so far as we know there is no reason to suppose that its incidence after non-scarlatinal hæmolytic-streptococcal throats would be greater.

To diagnose rheumatic carditis at its inception may fairly be looked upon as a preventive measure, for it is likely that the outlook will be benefited by prompt treatment. Whether anything more definitely prophylactic can be done during the "silent period" is at present uncertain, but in children who have already had one attack of rheumatism and then get a sore-throat, experience at West Wickham Heart Home and at Cheyne Hospital has suggested that aspirin (grs. 15—30 per diem according to age) given during the silent period immediately after the sore-throat may have a modifying effect upon the ensuing rheumatic exacerbation.

TUBERCULOSIS

I mention tuberculosis next because it is one of the most frequent causes of death in childhood. In 397 consecutive autopsies made by me at the Hospital for Sick Children, death was due to this disease in 17 per cent. Moreover, the young child has practically no immunity against tuberculosis, so that if exposed to infection, he will almost inevitably develop the disease.

The question of preventing this grave disease is bound up with its paths of infection. To all intents and purposes, a child is likely to be infected by one of two routes; either by the inhalation of particles of infected sputum from a phthisical person, or else by the ingestion of infected food, particularly milk. The inhalatory route is the more common; in the series of autopsies referred to above, infection was by the intrathoracic route in 67 per cent. of the deaths from tuberculosis—a figure which compares closely with that obtained by G. F. Still, who found that in a series of 269 children dying from tuberculosis, infection was by the intrathoracic route in 63·8 per cent.

The prevention of *intrathoracic tuberculosis* in young children depends on shielding them from contact with phthisical adults. It may be safely assumed that any young child who is brought up in a household which harbours one member with a positive sputum will inevitably become infected, and for infection to take place it is only necessary for the adult to stay in the house for a week or two. The chance of infection of young children in this way cannot be entirely prevented, for a child may already be infected before the disease in the adult is discovered, but clearly there are certain rules which should always be observed. Thus, no adult known to have phthisis should be allowed to stay in a house where there are children; and the appearance of tuberculosis in an adult who is living in a house where there are children should mean that either the adult or else the children should be taken to live elsewhere. Perhaps it would be possible to send the children away to be brought up by relatives, but it is better for the adult to be sent away to an institution or sanatorium for treatment. The children should also undergo a thorough medical examination, and to begin with, a holiday at the seaside or at a convalescent home would be a sound precautionary measure.

As to *infection by milk*, this can be prevented by sterilising the milk either by boiling or pasteurisation. Unless the milk happens to be obtained from a herd of certified tuberculosis-free cattle (for which the consumer has to pay a high price), milk given to children should *always* be sterilised by one of these two methods. Much of the milk-supply in our large cities is now pasteurised before delivery, and a considerable advance in the prevention of tuberculosis would result if this were made compulsory. Pasteurisation in the home is best done with special apparatus, and in any case needs care and intelligence, so that it is generally wiser to recommend sterilisation of milk in the home by the more simple method of bringing the milk to the boil.

Mothers who have carried out this precaution for their infants often ask how long they should continue with the boiling of the milk, and the answer should be—throughout childhood. There is surely no point in exposing older children to risks from which they have been shielded in infancy. The argument that small doses of tubercle bacilli in the milk may assist the child to build up an immunity is a treacherous one, for there is no means of regulating the dose of bacilli which might reach the child in this way, and further, the majority of children will almost certainly encounter enough bacilli by the inhalatory route to arouse their immunity mechanism.

Before leaving this subject, mention must be made of the important part which measles and whooping-cough play in promoting tuberculous infection in the chest. These diseases reach their maximum incidence during the pre-school years, and at this age it is not uncommon to see a child whose convalescence from them has been protracted and unsatisfactory, who has remained feverish and gradually lost weight, while signs have remained in the chest and have eventually culminated in a tuberculous catastrophe. It may be that the swelling and congestion of the mediastinal glands that occurs in these diseases lights up a dormant tuberculous focus in them, while the catarrhal state of the lungs which often persists after these illnesses offers a suitable nidus for the development of a tuberculous lesion. It follows that too much attention cannot be paid to thorough convalescence after measles and whooping-cough. Merely a week at the seaside, or the increasingly common practice of the family going by car to the seaside each week-end, gives a false sense of security and is quite insufficient. The child should be away at the sea or in the country for a minimum of six weeks, and during that time fresh air and daily exercise should be balanced by an hour or two of rest in the middle of the day. Cod-liver oil and Parrish's Food are useful adjuncts, but they do not take the place of a change of air.

INDIGESTION

Chronic indigestion is a common disorder in the pre-school child, and the symptoms show a wide range. They may point directly to a disturbed digestive function, and then include loss of appetite, failure to thrive, and the passage of undigested, slimy, offensive stools. Other common symptoms include perversions of appetite, such as "drinking all day," or eating raw vegetables, paper, or coal; persistent threadworm infection; daily pyrexia of a degree or so; or disturbances of sleep, such as bed-wetting and night terrors.

There are three principal factors that lead to chronic indigestion, and by giving attention to them, many of the symptoms which I have outlined can be prevented.

Unsuitable diet.—The diet often errs in that the child is given too much starchy food such as potato, bread, and the root vegetables, which leads to excessive bacterial fermentation, and the passage of loose, offensive motions. Often these foods are composed of much indigestible cellulose, which remains in the bowel as "roughage." This class of food has sometimes been recommended in the treatment of chronic constipation, but though it may be a useful line of therapy for adults, in children it does more harm than good. The residue from this diet is bulky and irritating to the large intestine, which reacts by secreting large amounts of mucus. Peristaltic movements then become less effective, and the stools when passed are hard and lumpy, and contain much undigested material and often masses of whitish mucus. Foods that when given to excess offend in this way are the root vegetables, such as carrots and turnips, dried peas and beans, especially haricot and butter beans, nuts, coarse oatmeal, wholemeal bread, and raw fruits containing skins and pips. The mucous catarrh of the bowel which this type of diet engenders seems to be particularly conducive to the persistence of threadworm infection; almost always one finds that children with a resistant threadworm infection are passing undigested and slimy motions, and the infection is difficult to overcome until these irritating elements in the diet have been reduced or removed.

Mismanagement.—This includes such obvious faults as allowing the child to eat as much as he likes of whatever he likes whenever he likes. Every child is entitled to have certain likes and dislikes; for instance some children will not touch an egg, others cannot bear even the sight of green vegetables on their plate, and the fat of meat is often refused. It is better to recognise these peculiarities, and to replace the unwanted food by other foods having a similar nutritional value, rather than to attempt to force the child to take what he obviously dislikes. Other children will be content to eat heartily of one particular foodstuff—often rather harmful to them—to the exclusion of others, and to allow an indulgence of this sort constitutes mismanagement.

Chronic infection of the nasopharynx.—This is not uncommonly associated with chronic indigestion, the latter being probably due to the constant swallowing of infected mucopus from the pharynx. Early morning cough, or the vomiting of mucus before breakfast, are likely complaints. The prevention of these symptoms will depend upon a thorough treatment of acute infections of the throat in the first place, and perhaps later on the removal of persistently infected tonsils.

BILIOUS ATTACKS (CYCLICAL VOMITING)

Under this heading I include attacks which are ushered in by a day or two of loss of appetite, lassitude or irritability, with furred tongue and offensive breath, followed by vomiting which is usually severe and lasts two or three days, accompanied by high fever and acetonuria. Occasionally a periodic fatty diarrhœa takes the place of the vomiting.

The prevention of these attacks is largely a matter of diet, which should be low in fat content and high in sugar. The fat of cow's milk is particularly troublesome, and the milk should always be skimmed before it is given to children with this sort of complaint. Cream should be entirely omitted, and the number of eggs should not be more than two a week. The various courses should be sweetened whenever possible, and honey, jam, and treacle should be regular items of the diet. Additional glucose after the meal is a useful adjunct, but is of little value in the absence of the other dietetic modifications. Any attempt to feed up these children, particularly with extras like cod-liver oil, should be strongly discouraged. Sodium bicarb. in grs. 20 doses twice a day has been found useful in the prevention of these attacks.

DENTAL CARIES

To anyone working much with children, the frequency of caries of the teeth must be most striking. The work of M. Mellanby, and C. Lee Pattison (1928) and others in the last few years has established the fact that much dental decay is undoubtedly preventable, and the application of this new knowledge should lead to a considerable lessening of dental troubles in the children of the future. It is often surprising how much decay of the teeth of the first dentition may exist without complaint of toothache, and this may perhaps account for the frequency with which parents are ignorant of, or disregard, the fact that their children's teeth are decayed. Yet there can be no doubt that disease of the milk teeth gives rise to much disorder of health, including anorexia, chronic indigestion, and sometimes habit spasms. Infection of the tooth socket by streptococci and other organisms is not uncommon, and may lead to apical abscesses or sometimes cause such distant effects as rheumatism.

The prevention of dental caries should properly begin at a time when the teeth are still forming within the jaw and are undergoing calcification, because the better the tooth at the time of eruption the more able is it to resist caries. It has been shown that diets that contain adequate supplies of vitamin D greatly stimulate the calcification of teeth, while cereal diets, particularly oatmeal, lead to the formation of hypoplastic poorly calcified teeth.

The teeth of the first dentition begin to calcify as early as the fifth month of intra-uterine life, and from then on calcification progresses rapidly. It follows that in order to ensure the eruption of a well-calcified set of milk teeth, attention should be directed to the maternal diet, seeing that the mother during her pregnancy does not undergo a shortage of such foods as milk, eggs, and butter, which contain vitamin D. But the prevention of caries in the first dentition does not stop there, for the workers referred to above have shown that the initiation and spread of caries in children can be limited by incorporating vitamin D in their diet, while on the other hand a cereal diet with a low vitamin content tended to have the opposite effect. They were also able to show that when caries had begun, a diet rich in vitamin D tended to arrest the process by producing a "hardening" of the teeth.

If we consider for the moment only the milk teeth, it is clear that the care of the teeth means among other things the supervision of the diet, not merely in infancy, when already much attention is paid to vitamins, but during the whole of the pre-school period as well, to see that as far as possible the diet shall not be composed mainly of cereals (which on account of their cheapness and bulkiness are apt to be the main constituent of the diet in the poorer homes), but that the amount of cereal shall be adequately balanced by foods containing vitamin D. During these years a child should have a pint of milk a day, three eggs a week, and at least ½ oz. of butter a day, and preferably double that amount. If the home circumstances are such that a deficient diet is likely, a teaspoonful of a cod-liver oil emulsion should be given twice a day during the winter months.

It must not be supposed that by giving attention to the diet to prevent caries, the customary hygiene of the teeth—such as cleaning them twice a day—may be neglected. But it is not uncommon to see children whose teeth, in spite of scrupulous cleaning, are badly decayed, while others who have not taken the same care have a good set of strong teeth. No amount of cleaning can undo the harm wrought by a bad diet.

The remarks made concerning the prevention of caries in the first dentition apply with even greater emphasis to the permanent dentition. The first tooth of the second dentition begins to calcify a short time before birth, and except for the wisdom teeth, all the others of the second dentition begin to calcify during the first two years, and calcification goes on throughout the pre-school period; so that if during this time the diet is supervised along the lines indicated above, not only will the prevention of caries in the milk teeth be attempted, but the best foundation will be laid for ensuring a healthy set of permanent teeth.

POLIOMYELITIS

Although the deformities of poliomyelitis may be met with at all ages, the onset of the disease attains its maximum incidence between the ages of 2 and 5 years; the amount of crippling and invalidism caused by poliomyelitis makes its prevention eminently desirable.

Several years ago S. Flexner and A. J. Lewis (1910) showed that the serum of patients who were convalescent from poliomyelitis contained protective substances which could prevent the development of paralysis in animals after they had received inoculations of the virus, and recently this work has been applied to the disease in the human subject with encouraging results. There are two difficulties in the preventive use of poliomyelitis serum. In the first place there have been no large stores of serum on which a doctor could draw, and secondly the serum, to be effective, needs to be given during the acute febrile stage of the disease before the appearance of paralysis, and until recently the possibility of diagnosing the disease in its preparalytic stage has scarcely been realised. During an epidemic of the disease, early diagnosis would be less difficult, but the majority of cases in this country occur sporadically. The disease has its greatest incidence in the third quarter of the year, and during this period the possibility of the infection should be particularly borne in mind.

Preparalytic stage.—According to J. M. Smellie (1933) this stage only lasts a day or two, during which time the temperature is raised and there is headache, with perhaps pains in the back or limbs, and there may be vomiting or drowsiness. The most suggestive sign is stiffness of the neck muscles, not amounting to retraction of the head, but enough to prevent any movement which requires full flexion of the neck or spine. These symptoms are unfortunately very vague, but examination of the cerebro-spinal fluid may settle the matter, and therefore when there are grounds for a healthy clinical suspicion a lumbar puncture should be carried out.

The cerebro-spinal fluid is under increased pressure, and the cells are increased to between 50 and 200 per c.mm., the type of cell being mainly polymorphonuclear at first, and later lymphocytic. The protein is raised, the chloride value remains unaltered, the sugar is unaffected, and culture is sterile. The differential diagnosis from tuberculous meningitis may offer considerable difficulty, but the short clinical history in poliomyelitis and the usually reduced chloride value of the cerebro-spinal fluid in tuberculous meningitis are important distinguishing features.

As soon as the diagnosis is made no time should be lost in giving convalescent serum. It should be given intrathecally in an amount slightly less than the amount of cerebro-spinal fluid that has been withdrawn, and a second injection should be given intravenously, the total varying between 25 and 50 c.cm. Information concerning the available supply of serum has been given in THE LANCET of Oct. 14th, 1933, p. 874. Outfits containing enough serum for the treatment of one case can be obtained from the medical superintendent of the Western Hospital, Seagrave-road, Fulham, London, S.W.6, on condition that an account of the case and the result of treatment are subsequently furnished. A prophylactic antiserum prepared from the horse by the Lister Institute of Preventive Medicine is also available, and may be given to those who have been exposed to infection, particularly during an epidemic, and for this purpose an intramuscular injection of 5 c.cm. is recommended.

WILFRID SHELDON, M.D., F.R.C.P.
Physician in charge of the Children's Department, King's College Hospital.

THE SERVICES

ROYAL ARMY MEDICAL CORPS

Lt. (on prob.) R. V. Wright retires on account of ill-health.

TERRITORIAL ARMY

Capt. T. E. A. Carr to be Maj.

Lts. H. A. Raeburn and W. P. Kennedy to be Capts. supern. for serv. with Med. Unit, Edinburgh Univ. Contgt., Sen. Div., O.T.C.

Lt. P. J. May to be Capt.

J. B. Fulton (late Cadet, Glasgow Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. W. W. Brown, *from Active List*, to be Capt.

INDIAN MEDICAL SERVICE

Col. Sir R. McCarrison to be Maj.-Gen.

Capt. F. E. B. Manning to be Maj.

Capt. M. S. Katre relinquishes his temp. commn.

ROYAL AIR FORCE

The undermentioned Flying Officers are promoted to the rank of Flight Lt.: E. Donovan and J. F. Sandow.

COLONIAL MEDICAL SERVICE

Dr. H. B. Lee (Medical Officer) has been promoted to Specialist, Nigeria; and Dr. P. D. Oakley (Deputy-Director, Medical Service, Gold Coast) becomes Director of Medical and Sanitary Services, Sierra Leone.

SPECIAL ARTICLES

ROYAL COLLEGE OF SURGEONS OF ENGLAND

THE BUCKSTON BROWNE DINNER

THE sixth Buckston Browne annual dinner of Fellows and Members was held as usual in the library of the College on Nov. 8th. Before the loyal toast, Sir Holburt Waring, who presided, circulated the ample loving-cup presented by Lord Riddell to the College since the last annual gathering, in token of good fellowship and sacrifice. Later in his brief remarks Sir Holburt referred again to the revision of the medical curriculum, expressing a hope that the report of the conference with the sister College and the universities of Oxford, Cambridge, and London would soon be issued and a beginning made with the correlation of the preliminary and intermediate subjects, and with putting the clinical subjects on a more scientific basis. He said that in future the College, before admitting to the Fellowship Examination, would require each candidate to have held a resident post with charge of beds in a hospital for a period of six months. He recalled the formal opening last July of the Surgical Research Farm at Downe, with Sir Arthur Keith in charge as Master, and the link between the work there and the two Leverhulme studentships held at the College. Sir Buckston Browne, in reply to the toast of his health, spoke of the inauguration of the Research Farm as the realisation of Sir Arthur Keith's wish, marking the transition from the dry-bone tradition to the more direct study of the mystery of life. The following is a list of those present:—

Council.—Prof. G. E. Gask and Mr. Wilfred Trotter (Vice-Presidents), Mr. Ernest W. Hey Groves (Bristol), Sir Cuthbert Wallace, Mr. F. J. Steward, Mr. C. H. Fagge, Mr. R. P. Rowlands, Mr. W. Sampson Handley, Mr. A. H. Burgess (Manchester), Mr. Victor Bonney, Mr. Hugh Lett, Mr. R. E. Kelly (Liverpool), Mr. Graham Simpson (Sheffield), Mr. A. James Walton, Mr. A. E. Webb-Johnson, Mr. G. Gordon-Taylor, Sir Charles Gordon-Watson, Mr. R. C. Elmslie, Mr. L. R. Braithwaite (Leeds), and Mr. H. S. Souttar.

Fellows.—Mr. J. Johnston Abraham, Sir Charles Ballance, Major B. Biggar, Mr. R. C. Brock, Sir Buckston Browne, Mr. E. Rock Carling, Mr. W. E. Le Gros Clark, Mr. Harold Collinson (Leeds), Sir Crisp English, Mr. G. F. Gibberd, Mr. A. M. H. Gray, Mr. Eardley Holland, Mr. John P. Hosford, Mr. Grant Massie, Sir George Newman (Honorary Fellow), Mr. Harry Platt (Manchester), Mr. Cyril A. Raison (Birmingham), Mr. Hugh Reid (Liverpool), Mr. E. W. Riches, Mr. F. W. Roques, Mr. C. E. Shattock, Mr. Harold Upcott (Hull), Mr. P. Jenner Verrall, Mr. Cecil P. G. Wakeley, and Mr. Duncan Wood (Bristol).

Members.—Dr. C. W. Alford (Chelmsford), Mr. J. W. Applegate (Dewsbury), Dr. E. A. Barton, Dr. Arthur Bevan, Dr. H. N. Burroughes, Mr. Frank Coleman, Group Capt. Henry Cooper, Mr. Frank Corner, Dr. H. P. Crampton, Dr. David de Souza, Prof. E. C. Dodds, Dr. H. Farncombe (Southsea), Dr. Alfred Franklin, Mr. A. P. Gibbons, Dr. C. Gibson (Worthing), Dr. Sydney J. Haylock (Bournemouth), Dr. R. J. Hodgkinson (Hindhead), Dr. N. G. Horner, Dr. T. C. Hunt, Mr. H. H. Langston, Dr. H. B. Logan (Bristol), Mr. H. A. Lucas, Dr. W. J. McCardie (Birmingham), Dr. Oswald Marriott (Haywards Heath), Dr. W. N. May (Reading), Dr. Frederick Mayes (Bristol), Dr. Egbert Morland, Prof. R. Hughes Parry (Bristol), Mr. T. J. Phillips (Harrow), Mr. A. T. Pitts, Dr. A. R. Pocock, Dr. H. Rivers Pollock, Dr. E. A. Blake Pritchard, Dr. Russell J. Reynolds, Mr. D. G. Rice-Oxley, Dr. Redmond Roche, Dr. W. M. Sadler (Slough), Mr. V. C. Snell, Dr. J. F. Taylor, Mr. H. de P. B. Veale (Ilkley), Mr. J. F. Walker (Southend), Dr. W. G. Willoughby (Eastbourne), Dr. H. Yates (Alton), and Mr. A. P. Yonge (Twickenham).

Others present.—Lord Riddell, Sir Frederick Menzies, Dr. Tom Hare, Mr. T. McCown, Mr. S. Forrest Cowell (secretary), Mr. R. H. Burne (acting conservator), and Mr. Kennedy Cassels (assistant secretary).

After dinner, as usual, the galleries of the College were open for social converse, and on leaving each guest received an enlargement of a snapshot taken at Downe of Master, President, and Benefactor.

MEDICINE AND THE LAW

Drunkenness as a Defence in Criminal Cases

A LEARNED author writes in the current *Law Quarterly Review* a full account of drunkenness as a possible defence to the many criminal charges which contain the ingredient of intention. The law has always stood solidly on the position that voluntary drunkenness is never a defence. A drunkard, declared the great Coke, is *voluntarius dæmon;* he "hath no privilege thereby" but merely aggravates his wrongdoing. Sir Matthew Hale, another famous authority of the Stuart period, similarly called drunkenness *dementia affectata*, a voluntarily contracted madness, which was no excuse except in two cases—(*a*) where the patient has inadvertently eaten or drunk something by what Hale quaintly calls "the unskilfulness of his physician or the contrivance of his enemies," or (*b*) where "habitual or fixed phrenzy" can be established, as distinct from "simply phrenzy occasioned immediately by drunkenness." In the nineteenth century the decision in R. *v.* Meakin (1836) was instructive. The prisoner stabbed someone with a fork when "something the worse for liquor." The judge said that the use of a deadly weapon so clearly displayed malicious intent that drunkenness could not alter the position. Stephen, J., in R. *v.* Davis (1881) ruled that a man would not be criminally responsible if by drunkenness he brought on a state of disease which caused such a degree of madness even for a time as would have relieved him from responsibility if it had been caused in any other way. The same judge in R. *v.* Doherty (1887) observed that a man intends the natural consequences of his act. Drunkenness was no excuse for crime, but if the crime was such that the intention of the party is a constituent element, "you may look at the fact that a man was in drink in considering whether he formed the intention to commit the crime." A drunken man, said the judge, may form an intention to kill another person, or he may not; if he does form that intention, although a drunken intention, he is just as much guilty of murder as if he had been sober. Lord Coleridge raised some doubts in R. *v.* Meade (1909) by using the slightly rhetorical phrase "reason dethroned by drink." The leading case is now to be found in Director of Public Prosecutions *v.* Beard (1920), where the accused, charged with rape, had suffocated a girl of 13 by putting his hand on her mouth to stop her screaming. Mr. Justice Bailhache told the jury that, if a man said "I was mad and turned into a brute by drink," it was no defence unless the jury was satisfied that he was so far out of his senses that he did not know what he was doing. The Court of Criminal Appeal thought this was likely to mislead the jury; it imposed a test of the defence of drunkenness which was applicable only to the defence of insanity. In the House of Lords Lord Birkenhead observed that Beard's drunkenness could be no defence unless it were established that, at the time of committing the rape, he was incapable of forming the intent to commit it, "which was not in fact contended at the trial." Lord Birkenhead's judgment, though some think it went too far, is at present the locus classicus of the law.

It is interesting to the medico-legal student to observe the legal distinction between drunkenness and insanity. It is even more interesting to note that the author of the *Law Quarterly Review* article can say that if the law were modified and if drunkenness were treated more as a disease, the law would bring moral and legal responsibility into closer harmony. There are inebriates, he concludes, who cannot help being such for reasons of a diseased condition of the brain induced by alcohol either voluntarily or on account of the heritage of a neurotic and unstable brain. "It is but fair that the law should take as much account as it can . . . of the factors that may modify or make impossible full responsibility by fettering or preventing normal volition."

CANADA

(FROM AN OCCASIONAL CORRESPONDENT)

THE PROVINCE OF QUEBEC: VITAL STATISTICS

A REPORT has been issued by the Provincial Bureau of Health of Quebec which shows that in the year ending last July the death-rate in this province was the lowest in its history, falling to 8·7 per 1000 population. In July, 1932, the death-rate of the previous 12 months was 9·9 per 1000, that being the first time that it was below 10. The report points out that the recent figure confirms a progressive tendency which has been observed since 1926, but, as elsewhere, the birth-rate has exhibited a similar decline. During the first seven months of the year under review there were 45,250 births compared with 48,993 in the previous year; the deaths during the corresponding seven months totalled 19,010, as against 19,750 in the previous year. In this province, however, the marriage-rate was falling. There were 1626 marriages in the past July compared with 1537 in July, 1932, while the total for seven months fell from 8361 to 7855. In the city of Montreal during the past July there were 342 live births, 71 marriages, and 174 deaths.

The health of infants and young children in Montreal is far from satisfactory. This can be gathered from a recent report issued by Miss E. Beith, executive director of the Montreal Child Welfare Association. The report shows that a marked increase in attendance at the pre-school health clinics has been observed—which is all to the good, but the health of the subjects is more unsatisfactory than has been known since the clinics of the association were inaugurated. 1200 more children attended these clinics than in the same period a year ago. 1987 children were immunised against diphtheria compared with 575 last year, while the number of interviews devoted to instructing mothers on the care of their babies showed an increase of 600 over last year. It is not that the death-rate of babies under the supervision of the Montreal Child Welfare Association has increased, but physicians and nurses are reporting a general lowering of health among the children under one year of age. Until this autumn, according to the report, this group of children had not shown the decrease in vitality which has been so manifest for some time in the older children and which the framers of the report have no hesitation in attributing to the effects of continued unemployment. It is now found that these infants are definitely under weight and many of them anæmic, responding very badly to treatment; the Child Welfare Association is one of the federated charities of Montreal, and has under its care, for health supervision and instruction, 10,000 Montreal children under school age.' Further monetary support is needed.

MENTAL CASES IN CANADA

According to Dr. W. T. Bruce, director of the Mental Hygiene Institute, another of the federated charities, patients in the mental hospitals of Canada have increased from 30,488 in January, 1931, to 32,059 in January, 1932. During 1930 8869 new patients were admitted, and in 1931 10,089 were admitted. It is estimated that the cost of maintaining them in hospital is more than $10,000,000 a year, or $330 annually for each individual. It is also stated that about 50 per cent. of the patients in Canadian mental hospitals "are suffering from no brain or nerve injury and have no physical basis for their affliction." Their mental illness, in the opinion of Dr. Bruce, is the result of inability to reconcile their personal wishes and desires with the demands of society; the resulting lack of harmony within more or less destroys completely any possibility of happiness, and Dr. Bruce pleads earnestly for wider public instruction in the principles of mental disease and affliction.

THE NEUROLOGICAL INSTITUTE IN MONTREAL

A Neurological Institute, as a unit of the medical department of McGill University, is in course of erection in direct connexion with the Royal Victoria Hospital, but also having association with the Montreal General Hospital. When completed, the building will accommodate 30 patients in public, private, or semi-private wards, and there will be operating-rooms, an X ray department, animal rooms, and laboratory space for carrying on pathological and histological work. It is proposed to provide living accommodation for a small group of research fellows. Neurosurgery has been practised at McGill University by Prof. E. W. Archibald hitherto, and many students have benefited by his teaching. It is intended to extend greatly the scope of the work, and with this in view Dr. Wilder Graves Penfield has joined the McGill medical school as the first professor of neurology. Dr. Penfield is a graduate in arts of Princeton University and of medicine in the Johns Hopkins University, and was a Rhodes scholar at Oxford. He has also held a Beit Memorial Research Fellowship. He has been recently neurologist at the Vanderbilt Clinic and associate professor of surgery at Columbia University. He is accompanied to McGill by Dr. W. V. Cone, who has worked with him in New York.

An obstacle to the establishing of a big neurological centre in Montreal was until recently the lack of funds to house and carry on the work in a manner in accordance with the views of those interested, and it is owing largely to the Rockefeller Foundation that success has attended the efforts of those anxious to have in Montreal an institute which will bear comparison with any on the American continent. The Foundation, when approached, concluded that McGill University, with its reputation and environment, offered a proper field for the teaching and practice of neurology and neuro-surgery, and came forward with a gift of $1,232,652, which virtually set at rest all financial anxieties. The Provincial Government of Quebec promised $20,000 a year, and the city of Montreal $15,000 annually. Of large personal gifts there should be mentioned $100,000 from Sir Herbert Holt, president of the Royal Victoria Hospital, and governor of McGill University; $100,000 from Mr. J. W. McConnell, and $25,000 from Mr. Walter Stewart; both these latter are governors of McGill University and of the Royal Victoria Hospital.

Lord Bessborough, the Governor-General of Canada, has now laid the foundation-stone of the Institute, and Dr. C. F. Martin, Dean of the Faculty of Medicine, has recorded in the *McGill University News* the story of the new institution, wherein he gives a large share of credit for the consummation of the scheme to Prof. Archibald.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE POPULATION OF THE FREE STATE

THE report of the Registrar-General of the Irish Free State for 1932 was issued last week. The population was estimated as 2,974,000, showing an increase of 17,000 over the previous year. The actual number of deaths was greater than in 1931, but the death-rate was lower—namely, 14·45 per 1000, whereas in 1931 it was 14·52. The number of births (56,240) was the lowest ever recorded, the rate being 18·91 per 1000. The rate for the ten years 1922–31 was 20·17, and in 1931 the rate was 19·30. The number of illegitimate births was 3·23 per cent. of the total births. In Northern Ireland the percentage was 5·1, in England and Wales 4·4, and in Scotland 7·1. The infant mortality showed a rise, the rate being 72 per 1000 births, against 69 in 1931 and 70 in 1922–31. There is a great disparity between the rate of 95 in urban areas and 59 in rural. Among legitimate children the death-rate was 67 per 1000; among illegitimate it was 240. Emigration has declined to such an extent that it is now overbalanced by immigration, and the natural increase of births over deaths is, for the first time for 85 years, showing its effect on the population.

THE POISONS BOARD

Sir Gerald Bellhouse has been appointed chairman of the Poisons Board established under Section 16 of the Pharmacy and Poisons Act, 1933. The other members of the Board are:

	Appointed by
Sir Walter Greaves-Lord, K.C., M.P.	Home Secretary.
Sir William George Lobjoit, J.P.	
Mr. M. H. Whitelegge	
Mr. J. M. Johnston, F.R.C.S. Edin.	Secretary of State for Scotland.
Mr. J. N. Beckett	Minister of Health.
Dr. G. F. McCleary	
Mr. H. E. Dale	Minister of Agriculture and Fisheries.
Sir Robert Robertson, F.R.S. (or deputy)	Ex officio as Government Chemist.
Mr. J. H. Franklin	Pharmaceutical Society of Great Britain.
Mr. H. N. Linstead	
Mr. G. A. Mallinson	
Mr. E. T. Neathercoat, J.P.	
Mr. P. Sparks	
Sir William Willcox, M.D.	Royal College of Physicians of London.
Dr. R. Stockman, LL.D.	Royal College of Physicians of Edinburgh.
Dr. S. A. Smith, D.P.H.	General Medical Council.
Dr. G. Roche Lynch, F.I.C.	Council of the Institute of Chemistry of Great Britain and Ireland.
Dr. J. W. Bone	British Medical Association.

The duties of the Board are to prepare for the approval of the Home Secretary a list of the substances which are to be treated as poisons for the purposes of the Act, and generally to advise him in regard to the rules to be made for the control of poisons.

PUBLIC HEALTH SERVICES

Dysentery and Typhoid in Mental Institutions

WHILE there has been no more striking evidence of the benefits of modern sanitation than the decline in those forms of acute communicable disease which are contracted by the alimentary route, recent occurrences, especially in Yorkshire and Lancashire, have shown that persistent sanitary defects or loopholes in administration may still lead to serious outbreaks of dysentery or the enteric fevers. Such epidemics, however, may be regarded as exceptional and, in a sense, accidental. Improvement in the personal habits of the people has, no doubt, been an important factor influencing the decline of these diseases among the general population, and now, except where there has been gross contamination of water or some article of food, the danger is greatest among those, such as children, who can least be expected to exercise sanitary care. For a like reason, a large group of persons among whom such infections are still common is to be found in the population of mental hospitals. Dysentery and the enterics continue, unfortunately, to be a cause of anxiety to the Board of Control and to the medical superintendents of several mental hospitals. It is not surprising, therefore, that the supplement to the Board's annual report[1] for 1932 on scientific research work, and the reports of visiting committees should contain repeated references to this problem.

In some hospitals examination of fæces and blood for the detection of cases or carriers represents a large part of the total volume of laboratory work. Indeed, it is almost possible, from a glance at the summary of laboratory examinations, to judge whether an institution has recently experienced, or is still experiencing, intestinal infections in endemic or epidemic form. Several institutions are not only practising the most careful scrutiny of all inmates showing the least suspicion of infection with the typhoid-dysentery group of micro-organisms, but are also making, as a matter of routine, bacteriological and serological examinations of all new patients. As a result, the practical control of the diseases in question, on a scientific basis, is within reach. Valuable observations, too, are being made, and some conclusions of general interest are emerging. For instance, Dr. P. W. Bedford, medical superintendent of Dorset mental hospital, concludes from a search for dysentery carriers that:—

(*a*) Dysentery is rarely brought into the hospital from an outside source.

(*b*) Agglutination reactions of blood do not discriminate carriers.

(*c*) Case-records of "dysentery and diarrhœa" not supported by bacteriological examination are of little value and may be misleading.

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[1] Nineteenth Annual Report of the Board of Control for 1932. Part II. H.M. Stationery Office. 1933. Pp. 178. 3s.

(d) The excretion of *B. dysent.* Flexner in stools of known carriers is markedly intermittent and serial specimens of fæces must be strictly consecutive.

(e) A true carrier, who has never shown symptoms of the disease, must for ever be considered suspect, despite repeated negative results.

Similarly, Dr. H. Stafford, of the Cheshire hospital at Macclesfield, from his studies of the fæces and blood of cases with a known history, decides that "examination of sera for agglutinins to Flexner's organisms is not likely to prove of much assistance in any search for dysentery carriers."

Examinations of fæces, therefore, must be depended upon for the discovery of potential centres of infection. In this connexion at the West Riding mental hospital, Wakefield, Prof. Shaw Bolton failed to find organisms of the typhoid-dysentery group in specimens from any new admissions during the year, an experience which supports Dr. Bedford's conclusion, quoted above, that dysentery is rarely introduced from without.

The type of dysentery appears to be fairly constant in any one institution, although various types prevail in different places.

At the West Riding hospital, Wadsley, agglutinable Flexner WY was isolated in 35 of 47 cases, in another case the same type was present in non-agglutinable form, and in 8 others it was assumed to be the cause from diagnostic Widal tests. From the remaining 3 cases *B. dysenteriæ* Sonne was isolated. At the not very remote sister hospital at Wakefield, among 8 new cases Flexner Z occurred in 6 and Flexner V in 2. Of 38 cases in the Leicester City mental hospital, 21 were due to Flexner Z, 11 to Flexner Y, and 6 to *B. dysenteriæ* Sonne.

In addition to the careful search for carriers and their isolation which is proceeding, active prophylaxis is being employed. At the Bristol City mental hospital 271 new admissions during the year received prophylactic vaccines, and it is recorded that only one case of dysentery occurred due to a *B. dysenteriæ* Flexner WX strain. At the Stafford county hospital, Cheddleton, almost the whole hospital population has been inoculated with a sensitised anti-dysentery vaccine, without any severe reactions, doses of a mixed Flexner W, X, Y, and Z vaccine being given up to 4000 millions. Dr. W. F. Menzies, the medical superintendent, remarks that it would be premature to judge of the efficacy of this form of prophylaxis by a recent outbreak of dysentery. At Caterham (London Co.) mental hospital, where Flexner Z is the prevailing strain, all occupants of infected wards are now immunised with a vaccine prepared from indigenous cases, the dosage being 250 and 500 million organisms. Altogether, 322 patients have been inoculated. Here delay in the treatment of a ward was signalised by the occurrence of three secondary cases in rapid succession.

ENTERIC FEVERS

While the enteric fevers do not constitute such a constant problem as dysentery, there is ample evidence that their liability to sporadic outbreak is a matter of concern. At the West Riding hospital, Wadsley, where organisms of the typhoid-dysentery group have not been found in any newly admitted patient, nevertheless five known typhoid carriers are under isolation, and two fresh cases of the disease occurred during the year. One of the carriers had suffered from the disease in 1926, and after weekly fæcal examinations for three months was regarded as free from infection. She contracted dysentery (Flexner V) in 1929, and went through a similar period of bacteriological scrutiny thereafter without, apparently, the detection of any typhoid bacilli, and it was not till 1932, when a search for dysentery carriers was being made, that she was discovered to be excreting the typhoid bacillus intermittently and in small numbers.

The rôle of the gall-bladder in the typhoid carrier state receives some prominence in the reports. At Dorset mental hospital, Dr. Bedford is carrying out a post-mortem bacteriological examination of all gall-bladders, but so far has failed to isolate any of the typhoid group from cases not known to be carriers during life. At Leavesden (London Co.) mental hospital, now an institution for mental defectives, it was decided to carry out cholecystectomy in suitable cases and, accordingly, the operation was performed upon three male and four female patients. Two died of cardiac or pulmonary post-operative complications, but the carrier state was successfully abolished in the other five.

An investigation of much general interest has been carried out by Dr. G. W. Fleming, at the Hereford mental hospital. Following the method of Wilson and Blair and using their liquid enrichment medium, Dr. Fleming has succeeded in isolating *B. typhosus* or *paratyphosus* B four times in 14 successive examinations of the institutional sewage over a period of less than three months. During the same period carriers were being sought and isolated, but three-fifths of the institutional population remained to be dealt with. The importance of these findings in relation to the disposal of institutional sewage requires no emphasis.

Salmonella infections, although not admitted to be associated with bacterial carriers, have received attention in the East Sussex hospital, where 148 new admissions have been submitted to agglutination tests by Dr. A. G. Shera. Thirteen, or 8·74 per cent., showed degrees of agglutination considered significant of recent or remote infection, varying from 1/25 to 1/250. Only two, however, were in dilutions as high as 1/50 and one in 1/250. In this connexion the records of Monyhull colony for mental defectives are of special interest. Here, under the coördinating influence of Dr. F. A. Pickworth, of the Birmingham Joint Board of Mental Research, serological examinations of a comprehensive character have been made of all admissions and transfers over a period of three years. Agglutinations, regarded as positive, have been obtained to Flexner Y, Shiga, Sonne, paratyphoid B, and different strains of salmonella, singly or in various combinations, in 188 or 52·2 per cent. of 360 cases examined. It is noted that none of the 360 cases had suffered from any form of intestinal disease when under care, nor was any positive history obtained of an attack prior to admission.

The very thorough search for centres of infection, thus seen to be almost the rule in modern mental hospitals, should go far to remove the reproach of endemic intestinal disease from their administration. While the underlying biological phenomena are no less complex than might have been expected, their gradual illumination will no doubt bring home to visiting committees the importance of giving the institutional staffs adequate facilities for controlling infection. The principles are simple enough, though the conditions peculiar to mental disease and deficiency render them difficult of application. It may be noted that quarantine and isolation accommodation of a modern type are sadly lacking in many institutions of this kind.

Diphtheria Control in Australia

In Port Pirie, a township of 12,000 inhabitants in South Australia, 80 cases of diphtheria occurred between April and October, 1932—more than half of them before the end of June. It was realised that ordinary preventive measures were proving ineffective and it was decided, therefore, to offer active immunisation. Dr. C. S. Barbour gives an interesting account[1] of what was done. The response to leaflets was very good, and in one way or another consent was obtained in respect of 633 of 977 scholars (65 per cent.) and, in addition, nearly 100 per cent. of contacts. Barbour contrasts this response with that obtained in inter-epidemic periods, when 25 per cent. of volunteers was considered high. The Schick test was carried out on school-children and on contacts over five years of age, contacts under five being immunised without a preliminary test. The control of the Schick test was always omitted. Since it seems that readings were taken late enough to eliminate the possibility of confusing a pseudo-reaction, and skin sensitivity (Moloney) tests were always done, this omission could not mislead and saved a good deal of time. Anatoxin prepared by the Commonwealth Serum Laboratories was the prophylactic used. Before immunisation 0·1 c.cm. of a 1 in 20 dilution of anatoxin was injected intradermally and readings of this sensitivity test were made upon the second day. If no reaction occurred, as was usual in young children, full doses of anatoxin (viz., two of 0·5 c.cm. and a final dose of 1·0 c.cm.) were injected at three-weekly intervals. Those showing a skin reaction, with or without induration, up to a diameter of 1·25 cm. received doses varying from 0·1 to 0·4 c.cm. Those developing reactions of greater diameter never received doses exceeding 0·01 c.cm. There were only four severe sensitivity reactions; three in adults and one in a girl 10 years of age. Two of these reactors were injected with 0·01 c.cm. of anatoxin and developed only slight local tenderness quite disproportionate to the skin reaction. Only one person experienced a general reaction after either the skin tests or prophylactic injections, and this was limited to transient dizziness and headache, symptoms which were repeated after each minimal immunising dose. Only once was a negative skin test followed by a fairly severe local reaction after a prophylactic dose. Of the total immunised, 68 were submitted to a confirmatory Schick test and it was found that 90 per cent. of those who had received the full course had become negative reactors and in the remaining 10 per cent. the test was only faintly positive.

In the same journal (p. 366) Dr. M. J. Holmes, of Canberra, relates the results of swabbings and virulence tests in an exposed group of 53 children of from five to seven years of age in a kindergarten and a non-exposed group (during an inter-epidemic period) of 25 children under the age of five years. In the first group 15 children from as many families returned morphologically positive swabs. In 6 instances the organisms were found to be virulent (12 per cent. of the class). In the non-exposed group 6 children were harbouring morphological diphtheria bacilli but in every case they were found to be avirulent. Holmes emphasises the necessity of following up swabbing by virulence tests. The percentage of Schick-negative reactors amongst those carrying virulent organisms was 67 per cent. and amongst carriers of non-toxic strains 37 per cent. No instance of clinical diphtheria occurred amongst positive reactors who were harbouring virulent organisms and Holmes thinks that if the infecting dose, although virulent, is small, a child although apparently susceptible may be able to acquire immunity "in time to forestall the development of the disease." It is, of course, now well recognised that a small virulent infection occurring in a child possessing basal immunity, although at the time Schick-positive, acts as a secondary stimulus and may rapidly raise the antitoxic content of the blood to at least Schick-negative level.

Enforcement of Food Standards

In a Chadwick lecture delivered at Reading on Nov. 14th Mr. E. G. Haygarth Brown, late of the Ministry of Agriculture, pointed out that as all foods are already standardised as far as possible in respect of injurious ingredients, and also for preservatives and colouring matter, any further standards must be of the kind that define the ingredients, other than injurious ingredients and preservatives, of which foods sold under certain names should consist. Of standards of this kind he mentioned a number already existing, but said that there were many articles of food for which standards might be and perhaps ought to be set up. The question was how to make the standard operative. There were objections to the multiplication of crimes, and retailers would, he thought, oppose further legislation of the kind known as quasi-criminal, under which a seller might be punished for selling a food not up to standard even though it was in a sealed tin or bottle, so that it was clear that he did not know and could not, in practice, have ascertained that it was defective. Such legislation was contrary to common sense; legal punishment was only useful as a deterrent, and if there was no intention to commit an offence there was nothing to counteract. On the other hand, many people thought that the imposition of civil liability only on the seller would not be effective. His own view was that civil liability does now exercise a fairly effective control over trade practice, and would do the same in the case of any new standards that might be set up.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 4TH, 1933

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 1 (last week 4); scarlet fever, 3996; diphtheria, 1282; enteric fever, 32; acute pneumonia (primary or influenzal), 824; puerperal fever, 38; puerperal pyrexia, 88; cerebro-spinal fever, 13; acute poliomyelitis, 13; encephalitis lethargica, 8; dysentery, 17; ophthalmia neonatorum, 67. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 7th–8th was as follows: Small-pox, 3; scarlet fever, 3253; diphtheria, 2025; enteric fever, 26; measles, 369; whooping-cough, 120; puerperal fever, 24 mothers (plus 6 babies); encephalitis lethargica, 254; poliomyelitis, 6; "other diseases," 159. At St. Margaret's Hospital there were 14 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 8 (2) from measles, 9 (1) from scarlet fever, 15 (5) from whooping-cough, 33 (13) from diphtheria, 76 (27) from diarrhœa and enteritis under two years, and 34 (4) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa, 6 occurred at Manchester, 5 at Liverpool, 4 each at Sunderland and Birmingham, 3 at Hull. Barrow-in-Furness reported the only death from enteric fever. Three deaths at Doncaster were attributed to influenza.

The number of stillbirths notified during the week was 218 (corresponding to a rate of 37 per 1000 total births), including 28 in London.

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[1] Med. Jour. Australia, Sept. 16th, p. 363.

CORRESPONDENCE

FLUCTUATIONS IN BLOOD COUNTS

To the Editor of THE LANCET

SIR,—In the annotation upon this subject in your last issue you appear to me to assume that the action of X rays and radium upon the formed elements of the blood is similar. This I understand to be a widespread belief, and I believe it to be erroneous. Of the damaging effects of radium there can be no question, but I have never met any evidence that exposure to X rays either by concentrated doses, as in deep X ray therapy, or by constant exposure, as in the case of X ray workers, produced any change in either the red cell or white cell count. I have examined numerous patients who have been exposed to deep radiation for cancer, and for many years we have at the London Hospital made periodical examinations of the blood of the X ray workers. Not a single instance of any appreciable effect upon either the red cells or the white cells has been observed. Further, I have seen numerous examples of severe anæmia in radium workers and still more examples of the early leucopenia with a relative lymphocytosis which one regards as a serious warning, and I have never seen these changes in any radiologist concerned *only* with the application of X rays. Theoretically, damage to the blood or bone-marrow by the action of X rays is of course possible, but in practice this risk affects the radium and not the X ray worker.

The fluctuations of the normal leucocyte count are no doubt with the usual technique considerable and with any technique appreciable, but fluctuations of the order described by Dr. Simpson seem to me almost incredible. A careful total and differential white cell count remains a valuable aid to diagnosis. If the normal fluctuations were not reasonably near the high standard noted by Prof. Eric Ponder we should not now be making 20 or 30 white cell counts a day at the London Hospital.

I am, Sir, yours faithfully,

London Hospital, Nov. 13th, 1933. P. N. PANTON.

To the Editor of THE LANCET

SIR,—The fact that the white cell count of the blood may show wide variations in normal individuals is well recognised by clinical pathologists. I hesitate to make any claim to the laying down of dogma, but would like to point out that in the article on the interpretation of the blood count, appearing in the Clinical Interpretation of Aids to Diagnosis (1930), I wrote, "there is no fixed normal figure for the total number of white cells in the circulating blood. Their numbers are subject to physiological variations depending upon exercise, upon the state of digestion, and even fluctuate throughout the day without apparent reference to any particular cause." This fact I believe to be well recognised among my fellow clinical pathologists.

I am, Sir, yours faithfully,

Wolverhampton, Nov. 11th, 1933. S. C. DYKE.

To the Editor of THE LANCET

SIR,—Your annotation correlating the hæmatological report of the X Ray and Radium Protection Committee with the tenth annual report of the British Empire Cancer Campaign has given further publicity to the large fluctuations in leucocytes which Dr. R. H. Simpson has described as occurring with great rapidity even under normal conditions. The fluctuations described are of such an order that, as you rightly emphasise, a serious doubt is cast on the value of a simple leucocyte count as ordinarily performed—a procedure which for years has had an important and valued place in practical medicine. Excluding gross and obvious leucocytic fluctuations, which are pathological and cannot be disputed, the significance of smaller ones appears to me to rest not so much on magnitude as on the range of figures between which the fluctuations occur. Thus if the extreme limits of a normal leucocyte count be fixed as 5000 and 10,000 per c.mm., then practically no significance attaches to fluctuations between these two figures. A person having a count of 9000 on one day, or, at a particular hour or minute, and a count of 6000 on another day, or, at another hour or minute, is not exhibiting a pathological fluctuation; but a person with a count of 5000 which falls to 3500, approximately the same 33 per cent. fall, is exhibiting a significant leucopenia requiring explanation; the same interpretation should be applied to leucocytic increases over 10,000. It is true that the explanation of these changes may not always be evident either on clinical or any other grounds, but where an X ray or radium worker exhibits a leucopenia, with a cell count of 4500 or less, the explanation should, for safety, be assumed to be the occupation. If it is accepted that variations between 5000 and 10,000 are insignificant then, included therein, will be most of the variations due to an afternoon tide, to digestion, and to other physiological factors. And if a fluctuation of ± 10 per cent. (8 per cent. according to Ponder) be regarded as allowing for the insignificant changes outside the normal range of 5000–10,000, then the diagnostic value of the leucocyte count remains, for interpretation purposes, on the firm basis which it has always occupied. Clinical pathologists in general have never attached great importance to fluctuations within the normal limits described above and an examination of the charts published on pp. 53–55 of the tenth annual report of the British Empire Cancer Campaign shows that nearly all the fluctuations described there lie within these normal limits.

In my own experience I have never met with a leucocyte count, outside the limits of 5000–10,000, in which a twofold increase or decrease, much more a fourfold, has not had considerable pathological significance, and this irrespective of such details as time of day. I am sure that this experience must be the usual one's otherwise the leucocyte count would long ago have joined the limbo of discarded and discredited practices.

With regard to X ray and radium workers as distinct from patients undergoing treatment, the conclusions to be drawn from an analysis of the routine examinations at the Middlesex Hospital agree with the "Recommendations" of the X Ray and Radium Protection Committee's report, namely, that a sustained leucopenia or lymphopenia (4500 cells or less in my opinion to be regarded as leucopenia) is a sign which cannot safely be disregarded. With such patients, where one looks for small significant leucocytic variations, which if found must be confirmed by daily observations, the technique must be beyond question and attention be paid to time of day, relation to meals, menses, and other factors. But for the ordinary simple leucocyte count of the medical and surgical ward the time of day, &c., is usually immaterial.

From the aspect of practical medicine it is obviously essential that significant fluctuations in a leucocyte count should not lightly be disregarded unless overwhelming evidence is produced to show that normal fluctuations regularly pass outside the limits defined above. I am, Sir, yours faithfully,

L. E. H. WHITBY.

Middlesex Hospital, W., Nov. 14th, 1933.

THE LATE PROF. EMILE ROUX

To the Editor of THE LANCET

SIR,—As one of those who, in 1890, attended Roux's famous course of bacteriology at the Pasteur Institute—to which allusion is made in the obituary notice in THE LANCET of Nov. 11th—I should like to refer to his remarkable powers as a teacher. Although so many years have passed since then I still retain a vivid recollection of his lectures. They were delivered in fluent and lucid French, easy to follow even by those whose knowledge of the language was limited. On one occasion he lectured continuously for two hours on rabies, holding his audience spellbound by his eloquence while he described the means by which Pasteur and he had worked out and established the methods of making the antirabic inoculations and gave convincing proofs of their success. Ten years, he said, had been devoted to this investigation and perhaps his share in Pasteur's great work has scarcely received the recognition it deserves. As rabies has for long ceased to exist in this country the importance of their work can hardly be realised. I have only seen one case of rabies in this country 45 years ago, but that was sufficient to enable me to realise the enormous value of antirabic inoculations in countries where the malady still persists. Roux's teaching and example inspired hundreds of workers. His insistence on accuracy and attention to every detail in his practical class, and his scathing remarks about any mistake or carelessness, were a valuable training in scientific method.

I am, Sir, yours faithfully,

Manchester, Nov. 13th, 1933. GEORGE R. MURRAY.

A CHRISTMAS APPEAL

To the Editor of THE LANCET

SIR,—For many years you have kindly allowed me to appeal through your columns for the Christmas Gift Fund of the Royal Medical Benevolent Fund. It is natural, as the existence and the usefulness of this benevolent fund become more widely known, that the number of our beneficiaries should steadily increase each year. During 1932 the fund was assisting over 650 beneficiaries and it has been our custom to give a Christmas gift to all the annuitants and to the poorest of the grantees.

I feel it is a great responsibility that none shall be disappointed this year. I ask, Sir, for your approval and support of my appeal. I am confident that it will be the wish of many that our beneficiaries who are either infirm or invalid doctors, widows or daughters of deceased medical men whose total incomes are not even £100 a year, may be given again this Christmas a gift of 30s. each.

Such a gift is not a luxury when the recipients are pressed for the necessities of life. It can but give some warmth or clothing to many who dread the winter months. Donations may be sent to the hon. treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, W.1. Every contribution will be distributed without deduction of expenses.

I am, Sir, yours faithfully,

THOS. BARLOW,
President of the Royal Medical Benevolent Fund.

Nov. 10th, 1933.

TUBERCULOSIS AMONG THE NORTH AMERICAN INDIANS

To the Editor of THE LANCET

SIR,—In an annotation in your issue of Sept. 23rd (p. 715) occurs the following statement: "The problem of tuberculosis among Red Indians has ceased to be one of any importance, for that noble race is almost extinct. Civilisation offered a poor exchange when the first of the gunmen replaced the last of the Mohicans." This statement is not in accordance with the facts, for the North American Indian is not dying out, nor is he showing any decided inclination in this direction. According to the census of 1930 the number of Indians in this country is 332, 397 against an enumerated Indian population of 237,196 in 1900. As the result of an enlightened policy increased appropriations and constant attention to the subject, the tuberculosis death-rate of our North American Indians seems to have been successfully arrested. The medical service for our Indians has been decidedly improved, and now gives on the whole reasonable satisfaction to a widely scattered population. Certain small tribes are unquestionably dying out, but the more predominating tribes, such as the Sioux, Chippewas and Navajos, are showing marked increases over previous years. This is particularly so of the Navajo, which is the finest type of surviving Indians in this country. They inhabit a vast reservation under practically ideal conditions of Indian life. A full report of Indians by tribes is in course of publication by the United States Census Office, but this will not be available for some time to come.

The tuberculosis problem as it affects our Indian population remains, however, of outstanding importance. In 1930, out of 5384 deaths from all causes among our Indians, the number of deaths from all forms of tuberculosis was 1175 or about 22 per cent. Among the Indians of British Columbia, in 1931 there were 512 deaths from all causes, of which 165 were from all forms of tuberculosis, or about 32 per cent. In British Columbia the death-rate from all forms of tuberculosis was 657 per 100,000 in 1931, a marked increase over the rate for 1922 which was 385. This compares with a rate of 189 for the Chinese of British Columbia, and 171 for the Japanese. I regret I cannot give the precise rates for this country since the Indian population of the registration area is not yet available, but it is probably safe to assume that it is not very much in excess of 300 per 100,000 —which, of course, is still extremely high. Under our present medical policy in the Bureau of Indian Affairs, a marked reduction in the tuberculosis mortality can be anticipated in the near future. We are providing better housing facilities and better provision for sanatoria, while much is being done also to improve the nutritional condition of the Indian population.

I am, Sir, yours faithfully,

F. L. HOFFMAN.

Wellesley Hills, Massachusetts, Oct. 21st, 1933.

VACCINES IN AMPOULES

To the Editor of THE LANCET

SIR,—May I call attention to the great inconvenience caused to practitioners by the custom of sending out vaccines in many coloured ampoules containing a series of doses determined without any knowledge of the needs of the individual patient. Sometimes a patient will come, with a box of these ampoules, asking that a course already commenced may be continued, and mentioning that her previous doctor says that the next dose should be half a violet ampoule. One has either to disparage the previous doctor by casting doubt on the ampoule method of treatment or else vainly endeavour to regulate dosage within the narrow limits which the ampoule system allows. I have now on my desk a box of ampoules with a letter from the pathologist pointing out in most courteous terms how I ought to use them. This was sent at the request of a specialist who had operated on the patient, but a bill was included made out to me personally. I much prefer to decide for myself how to administer a vaccine and I do not think pathologists should any longer assume that the practitioner is necessarily incapable of making such decisions, for they have at least the not inconsiderable advantage of seeing the patient under treatment. In this particular case the specialist did his work so well that the vaccine is not needed at all. All of which makes things very difficult, especially for the pathologist, for I really cannot see who is to pay his bill.

Perhaps some appropriate society would see fit to consider this subject. It would be a great gain if the public began to appreciate the fact that two or three routine doses of an anti-catarrh vaccine, or of an anti-typhoid vaccine, do not represent more than the roughest approximation to scientific usage.

I am, Sir, yours faithfully,

Sevenoaks, Kent, Nov. 12th, 1933. GORDON WARD.

CARBOHYDRATE METABOLISM IN HYPERTHYROIDISM

To the Editor of THE LANCET

SIR,—I am grateful to Dr. Lawrence for his interesting and valuable information in regard to depletion of heart glycogen in thyrotoxicosis—a further support for a marked carbohydrate bias in the diet of such cases. My remarks on the use of insulin were intended to apply to cases of maintained hyperglycæmia. I agree with Dr. Moll that it is not, as a rule, required. I trust I made it clear that my own use of carbohydrate in thyrotoxicosis was suggested by his article.

I am, Sir, yours faithfully,

Manchester, Nov. 10th, 1933. NORMAN KLETZ.

POLICE-COURT PUBLICITY

To the Editor of THE LANCET

SIR,—May I draw your urgent attention to the current and general practice of the popular press in publishing, often with startling and suggestive headlines, police-court proceedings against doctors—usually for Road Traffic Act infringements—before the case has been fully heard and the doctor's defence made available ?

The police recently issued a summons against me on two charges of dangerous driving, together with technical Road Traffic Act infringements of the kind which almost every motorist has to meet sometime. Part of the police case was heard before the magistrate and the remainder, with my own entire defence, was reserved for the sessions. To one's consternation, the more sensational parts of the police charges, and of the magistrate's impromptu comments upon hearing them, were broadcast by the press, before either the police case was completed or my counsel or myself had uttered a word of defence or explanation—or had called a witness.

The mere fact of a charge or summons is a serious matter for a medical man and procedure whereby the charges and the police case (or the more sensational parts of it !) can be published before the doctor's defence is heard, the penalty decided or the case dismissed, is surely a travesty of justice. Cannot our profession, through either the Medical Committee at the House of Commons or the Minister of Health, obtain legislation analogous to that restricting the publication of details of divorce court proceedings ? Such legislation would prevent the publication of details of police-court proceedings against doctors, at least until the hearing had been completed. Police-court publicity falls more heavily upon doctors than upon any other class ; and, since, by common justice, no penalty should be imposed until the case is proved, surely the publicity—usually, for a doctor, the most severe part of the penalty—should be delayed, if necessary by law, until the penalty itself has been decided.

I am, Sir, yours faithfully,

London, W., Nov. 13th, 1933. JOHN GODSALL.

DIVERTICULA OF THE DUODENUM

To the Editor of THE LANCET

SIR,—Your comment on the rarity of duodenal diverticula in last week's issue of THE LANCET (p. 1100) prompts me to quote figures showing the incidence of the condition as revealed by routine X ray examination of the alimentary tract at King's College Hospital. During the seven-year period, 1925–1931, diverticula of the duodenum were found in 31 of 4631 examinations, an incidence of 0·7 per cent. This estimate is, however, too low, as the figures for each individual year show. These are as follows :—

Year.	X rays.	Cases.	Percentage.
1925	521	1	0·2
1926	580	1	0·2
1927	630	1	0·2
1928	653	6	0·9
1929	612	9	1·5
1930	781	7	0·9
1931	854	6	0·7

It will be noticed that the percentage incidence jumped between the years 1927 and 1928 from 0·2 to 0·9 per cent., which figure has been maintained in the succeeding years. This jump in incidence coincides with a remodelling of the technique employed in the routine examination, the chief added feature being the screening of all cases in the oblique position. With further improvements in the technique, the figures show a corresponding rise. For the first eight months of this year, 10 cases have been found in 547 examinations, an incidence of 1·8 per cent.

At the present day, radiology is the most reliable source of figures relating to incidence ; operation statistics are of little value, as diverticula of the second and third parts of the duodenum are hidden by the pancreas. This applies with an almost equal force to post-mortem figures, for the diverticula will readily be missed at autopsy unless a definite search is made for them.

I am, Sir, yours faithfully,

London, W., Nov. 13th, 1933. HAROLD EDWARDS.

HEARTENING EXPERIENCE OF A POST-GRADUATE

To the Editor of THE LANCET

SIR,—All Englishmen—or better still, I should say all Britishers—hate sentiment, and wearing their hearts on their sleeves. But there are occasions when necessity compels one to do justice to the kindness and generosity of these much-misunderstood peoples. My experience is a case in point. For purposes of health I made a voyage to England from New Zealand, where I am in practice, and I thought I would take the opportunity of doing some post-graduate work. I had not been to London since the war, and it was with fear and trepidation that I contemplated this issue, feeling that I would be out of touch with my contemporaries and like a stranger in a strange land. My experience has been the exact opposite, and I cannot speak too highly of the help, consideration, and kindnesses which have been showered on me by those members of our profession with whom it has been my good fortune to come in contact. Had I arrived with the highest letters of commendation and been lauded up to the skies I could not have had more consideration shown to me.

My object in writing this letter is to say to those colonials who are hesitating to come over to take a post-graduate course owing to fear of isolation and being out of touch—"Come !—you will never regret it." I sincerely trust I am not out of place in making especial reference to one of the senior surgeons of the Prince of Wales's Hospital, and also to one of the L.C.C. Whitechapel Clinic staff who have not only been kindness personified, but in the case of the former has been "guide, philosopher, and friend," though I knew them not till meeting them at their respective clinics.

I return home soon with heartfelt gratitude and visions of—who knows ?—perhaps another equally pleasant visit in the future.

I am, Sir, yours faithfully,

HUGHES STEELE, M.R.C.S. Eng.

Nov. 8th, 1933. (Wellington, N.Z.)

PANEL AND CONTRACT PRACTICE

Panel and Insurance Committees in Conference

At the adjourned conference between the London panel and insurance committee at the County Hall on Nov. 9th, under the chairmanship of Mr. Shildkraut, discussion was resumed on the control of sickness expenditure. The approved societies pointed out that the bulk of the claims were for short periods ; 60 per cent. of unlinked claims—i.e., those in which there had been no previous claim within 12 months—declared off in three weeks or less. In the old days when it took some time for reports to come through this often made reference to R.M.O.'s useless, but now that a report came through in about five days such reference did tend to cut down the claims. An appeal was made to doctors to make use of the space on the certificate "you should come and see me again on.........." ; at present 40 per cent. of claims terminated on a Saturday. The medical reply was to the effect that Saturday was a real difficulty ; patients wanted to start work at the beginning of the week, and would sign off on Saturday if possible.

The medical side initiated a discussion on the medical certificate rules. They should be simplified. Friendly societies in the old days were careful not to overload the shoulders of the unpaid secretary, but the present book of forms with rules was like the Lord's Prayer on a threepenny piece. Neither doctor nor patient ever read them. Some of them were absurd—e.g., that relating to 28 days continuous illness before convalescent home treatment could be ordered. The approved society reply was that rules were printed for the convenience of the doctor. The present form had evolved as a result of difficulties that had arisen in the interpretation of simpler forms ; by simplifying a form a certain degree of precision was sacrificed. The medical side had not suggested simplification except in one particular where it was agreed that some flexibility should be allowed. Many doctors did ignore the 28 days' rule, but convalescent home treatment tended to grow on patients, and it was not desirable to encourage the tendency ; even now patients were apt to reapply year by year.

The question of reference to R.M.O.'s then came up. The complaint of the doctor is that apparently without rhyme or reason, after doing all he can possibly do for him, the patient is referred by the society without any notice whatever. There was no suggestion that the medical officers did not do their work well or that the patients were not well treated ; but the doctor felt slighted. The profession would like to know on what grounds their certificates were doubted. Was sufficient care exercised in selecting cases for reference ? The society reply was that whatever might have been the case in the past the utmost care was to-day being taken in the selection of cases. Every detail was considered by a special reviewer or examiner of claims, including the history of the case from date of entry, the contributions paid, current illness, the sick visitor's report, &c. Only a few cases, suspected of not playing the game, were sent early without a sick visitor's report. A test of these early cases had recently been made over a period of seven months : of 2674 claims thus referred 63 per cent. ceased to draw benefit. Such figures were bound to encourage societies to go on referring cases, especially as the percentage did not decrease with the increased number of references. The medical reply to this was that the doctor had to consider the health of the patient rather than the sickness benefit to which he was entitled. Adequate treatment of tonsillitis, for instance, might prevent in later years severe incapacity from rheumatoid arthritis. Agents did encourage insured persons, who had only a limited time left in which to make claims—e.g., those in Class K—to get what they could out of it in the time that remained. What was wanted was closer coöperation between societies and insurance doctors. Some societies did communicate with the doctor about a patient before sending for reference. On the medical side it was pointed out too that about one-third of all referred persons failed to attend either because they had been signed off before the notice came, or because they would have been signed off in a day or so, or through diffidence and indignation at their good faith being doubted. A suggestion was made that some simple form might be agreed upon for societies to send to doctors in the first instance. From the medical side were advanced a few further items in their dislike of reference. Some practitioners did not consider that the R.M.O.'s had consultant status. Some did not initiate references because they were afraid the patient would discover that the doctor had referred him. One society representative said that reference often revealed what was the matter with a patient, even when there was no question of the incapacity ; the diagnosis was cleared up.

The last subject discussed was sick visiting. If visitors acted up to the rules set out in the handbook by one of the societies the doctors would have no complaint ; but the impression created was that societies were on the look-out for *malingerers*. The type of visitor employed was not always a happy one ; with rather better education and a little more tact things would go more smoothly. They had been known to suggest change of treatment, change of doctor, removal to hospital. Sick visitors should not be allowed to remove dressings. Incapacitated women should be allowed to do little jobs about the home, such as getting children ready for school, without being reported. The societies in reply said that care was exercised in the selection of sick visitors, but they were human and were often placed in positions of great difficulty. The sick visitor's call often acted as a deterrent from indiscretion—e.g., visiting a cinema. Complaints were few in comparison with the number of visits paid.

The conference before disbanding decided to appoint an ad-hoc committee to work out in more detail the salient points of argument and compromise—four members of the panel and four of the insurance committee.

Urgent Prescriptions

The *Chemist and Druggist* has taken us to task for complaining of the dispensing service provided after hours in most areas. Maybe the conditions are not so unfavourable in small towns where the chemist himself, as well as his dwelling, is known to most of the inhabitants; but in large towns and certainly in the suburban areas of the metropolis a late dispensing service scarcely exists. If a prescription marked urgent is given to a patient after 8 P.M., in the great majority of cases it is brought back to the doctor with the statement that no reply could be obtained at any of the chemists and would the doctor make it up. Our contemporary suggests that it should not be outside the knowledge of any well-informed panel practitioner what chemists in his vicinity can be relied upon to render late service when properly required to do so. But it is no part of any insurance practitioner's terms of service to advise a patient where to take his prescriptions to be made up; in fact he breaks regulations if he specifies any particular chemist—insurance committees often receive complaints from chemists that Dr. X always sends his patients to Mr. C to have his prescriptions made up. Under the chemist's terms of service he cannot be required to open his premises after closing hours even if he is on the premises and the patient has a prescription marked urgent.

Not long ago an insured person complained that he was unable to obtain the medicine ordered for him by his doctor. In order that he might obtain it the same night the doctor gave the patient a prescription marked urgent. He left the surgery at 8.5 P.M. and arrived at chemist A ten minutes later. The door was shut but the lights were on and the proprietress and her dispenser could be seen in the shop. The door was not opened and the patient went on to chemist B. Here the lights were on and two men were visible in B's shop; there was no response at the shop door, so he knocked at the house door which was opened by the chemist's wife who when informed of the urgent prescription said "they were all gone." The patient returned to chemist A at 8.20 P.M., and after enlisting the aid of a constable knocked again; but during the knocking the lights were turned out. Finally he went back to the doctor who supplied him with the medicine. At the inquiry the proprietress of shop A said she remembered the knocking but it was not usual for the door to be opened once the premises were closed for the night. Chemist B said if he was available he did dispense urgent prescriptions but his wife, although she knew the prescription was marked urgent, did not tell him as she knew he had an appointment and was in a hurry to get away.

On this the inquiring committee reported :—

> It appears to us after a close examination of the scheme for securing a proper pharmaceutical service which has been made in pursuance of the medical benefit regulations, that neither chemist was contractually bound to dispense the prescription and we cannot find in the circumstances that there was a failure on the part of those chemists to comply with the terms of service. Our consideration of the case has disclosed a weakness in the arrangements which have been made for securing a proper pharmaceutical service in the area of the committee, we refer particularly to a prescription marked "urgent" which requires to be dispensed after the normal closing hour, and we think that something should be done to enable insured persons to obtain from a chemist medicines urgently required within a reasonable period after the normal closing hour.

In this case the doctor eventually supplied the medicine, but many insurance practitioners do not dispense even for private patients and the patient might not have been able to obtain it that night. There has been no alteration in the arrangements since this case was decided, so that the advice given by our contemporary to ring up the clerk of the insurance committee would be useless. Certain large chemists in the West End of London give an all-night service, but in most of the suburbs there is in no chemist's shop any indication to an insured person requiring urgent medicine after 8 P.M. where to go to get it made up.

OBITUARY

ERNEST EDMUND MADDOX, M.D., F.R.C.S.Edin.

CONSULTING OPHTHALMIC SURGEON, ROYAL VICTORIA AND WEST HANTS HOSPITAL

WE regret to record the death of Dr. Ernest Edmund Maddox, the well-known ophthalmologist, which occurred on Nov. 4th, at his residence in Bournemouth, at the age of 73. The son of Mr. J. F. Maddox, of Shipton, Oxfordshire, he was educated at Mill Hill School and pursued his medical studies at the University of Edinburgh. He was a successful student, first medallist of his year in physiology, and graduated as M.B., C.M. in 1882, proceeding to the M.D. degree in 1889. He had already shown his surgical bent by winning the Syme Surgical Fellowship, and choosing ophthalmology as his specialty, he was appointed assistant ophthalmological surgeon at the Edinburgh Royal Infirmary and University instructor on the subject in the wards. He took the F.R.C.S. Edin. in 1894, and for the next five years continued to work in Edinburgh with an increasing reputation as teacher and operator. He left Edinburgh in 1899 to take up the appointment of ophthalmic surgeon to the Royal Victoria and West Hants Hospital, and the rest of his ophthalmic work was done at Bournemouth and is recorded in his own clearly written works. In 1900 he was awarded the Middlemore Prize of the British Medical Association for the most important contributions to ophthalmology made during the three previous years, the work which specially dictated this appointment being the Tests and Studies of the Ocular Muscles, a particularly level-headed presentation of the facts which obtained a large circulation in America. But the originality of Maddox's teaching was best displayed in his book entitled "The Clinical Use of Prisms and the Decentring of Lenses." Here he drew attention to the treatment of the anomalies of the extrinsic muscles of the eye. His ocular demonstration of the points made through the medium of geometrical methods was found to be thoroughly ingenious, while the methods of treatment of latent muscular anomalies as advocated by him, were very generally accepted. This book was followed by another, "The Golden Rules of Refraction," which also obtained well-earned favour and ran through several editions. It was described by the author as "a little miniature of a subject to which only a large volume could do justice," and as a practical help to practitioners and students in the study of refraction it formed a useful book of reference. He was also the author in the Encyclopædia Medica of the article on refraction, and in Latham and English's "System of Treatment" he wrote on the mechanism of the ocular muscles. At the Oxford Ophthalmological Congress, in 1921, he delivered the Doyne memorial lecture and received the Doyne memorial medal.

As would, therefore, be expected, Maddox was well known throughout the ophthalmic world, especially for his studies of the ocular musculature in connexion with binocular vision. During the whole of his working life—i.e., for 50 years—he never ceased to work at problems connected with this branch of ophthalmology. So early as 1883, a year after graduation, he described before the Ophthalmological Society an apparatus for testing convergence, while his last important communication to the society was made in 1929—a brilliant paper on heterophoria, opening a discussion on that subject. Maddox was extraordinarily inventive, and his name will remain familiar to all ophthalmic surgeons on this account. A simple invention known as the "Maddox Rod" is almost universally used as a test for ocular imbalance in the routine examination of the eyes. One of the simplest and at the same time the most practically useful of the numerous apparatuses now used in connexion with the orthoptic treatment of squint we owe to him. This is the "eye-wakener" or "Cheiroscope," a device whereby an eye of a squinting child, rendered partially amblyopic by non-use, is educated by a method which excites the child's own interest. The child is caused to make a conscious effort with his hand, while his brain is also unconsciously educated to perceive the image thrown on his retina by means of that effort. Other ingenious devices by Maddox useful to the ophthalmic surgeon, are his V test for astigmatism, his axis-finder, and his electric eye-warmer. His high position in ophthalmology was widely recognised. He was at different times president of the ophthalmological section of the Royal Society of Medicine, president of the ophthalmological section of the B.M.A., and a member of the Société Française d'Ophtalmologie.

Dr. Maddox married Grace Rivers, daughter of Alexander Monteith, C.S.I., of Broich, Crieff, Perthshire, by whom he had a large family.

ARTHUR LIONEL BALY, M.R.C.S.

MEDICAL SUPERINTENDENT OF LAMBETH HOSPITAL

Arthur Lionel Baly, whose death occurred on Oct. 31st last, was born in 1880, the youngest son of the late Mr. Charles Baly, a well-known dental surgeon. He was educated at Highgate School and Emmanuel College, Cambridge, and after graduating in arts proceeded to University College Hospital for his medical training. He qualified as M.R.C.S., L.R.C.P. Lond. in 1906, and served as house physician at the Victoria Park Hospital until, in 1907, he became assistant medical officer at the Lambeth Infirmary, thus beginning an association that was to last for over 25 years. In 1911 he was appointed medical superintendent of the infirmary, the title of which was shortly after changed to Lambeth Hospital. Even before his appointment as superintendent he had taken a special interest in the problems of administration, which in one form or another were to form his life's work. The 23 years during which he was in charge at Lambeth were marked by notable development in the medical and surgical services rendered by the poor-law hospitals, and the great changes which accompanied these developments provided ample opportunity for Baly to show his genius for organisation. He was a strong advocate for decentralisation, not only in the larger matters of public life, but even in the details of administration of his own building. He realised that in order to secure the enthusiastic coöperation of those working in the building, it was best to give them as much responsibility as was compatible with efficiency, and to hamper them by the fewest possible regulations. It was characteristic of him that although placing responsibility on other shoulders, he was always willing to take the blame when things went wrong. He was particularly concerned in the well-being of the nursing staff, and was resolute to promote the efficiency of the hospital as a training school for probationers, in whose welfare he coöperated very generously with the matron. He provided and maintained a fund at his own expense to be used for the recreation of the nurses or to assist any of them in sickness or adversity. In his professional work he had to a very high degree the faculty of raising enthusiasm and securing the loyalty of his colleagues and juniors, which enabled him to make the hospital, for the management of which he was responsible, remarkable for its economy and efficiency.

MR. BALY

[Photograph by Elliott and Fry

As soon as Baly came to Lambeth he began to take an active part in the social work of the district, taking over the organisation of the 5th Lambeth troop of Boy Scouts, and becoming a manager of the Archbishop Temple school. He ran his troop with characteristic enthusiasm, paying special attention to athletics and particularly to boxing. In 1922 he founded the Fitzroy Lodge Athletic Club (the name of which was taken from the house of which he was a member at Highgate School), and later the Fitzroy Lodge Trust, which he endowed so as to secure the continuation of both clubs. The Fitzroy Lodge athletic club has gained a considerable reputation in many branches of sport, especially in boxing, several well-known amateur boxers having been trained by the club. Baly was for a time a member of the sports committee of the London Boy Scouts' Council, and for many years an honorary medical officer to the Amateur Boxing Association, and in that capacity accompanied the Olympic team to Amsterdam. Baly's deep interest in athletics had a touching side, for an accident in infancy had left him with a left miparesis; he was, however, when at Cambridge, cox of his college boat.

Baly was unmarried. He had a large number of personal friends, for he had travelled widely in Europe and America, and his great interest in human nature led him to cultivate the friends that he made. He was buried at Hampstead Cemetery on Nov. 3rd, and a memorial service held in the hospital chapel was numerously attended.

SIR GEORGE MAKINS

WE have received the following tributes among others to the memory of Sir George Makins from his colleagues.

Dr. H. G. Turney writes: "In some ways Makins offers a tempting subject for an appreciation, since the picture that he presents is from decade to decade one of remarkable stability; for example, during the past ten years the lines in his face got a little deeper, his speech a little more deliberate, and his gait somewhat slower, but in all essentials the man remained the same, and so he has been for the past 20, 30, or 40 years. It seems almost as if this were the outward expression of the profound conservatism of his nature. But this sturdy conservatism did not blind him to the wisdom or necessity of change. He was always ready to recognise this, but his attitude of mind was that the burden of proof lay upon the new rather than upon the old, and with that proviso he was prepared to enter upon its consideration without bias. His judgment was extraordinarily good, whether in its application to his professional activities or to matters of administration. His strength in counsel lay mainly in the absolute independence of his judgment, and in the fact that whatever might be the difference of opinion he never felt antagonism and never aroused it. He was as prepared to stand up against a roomful of friends as one of enemies, and that is a very remarkable quality. He was a clear thinker and clear talker, but he was not dogmatic enough to have a great vogue as a teacher, and his students were wont to follow his deeds rather than his words. He was always in sympathy with the young, and as he lost his old friends by death the gaps were up to a point filled by the new generation, and so as time went on he was both loved and venerated by everybody at his old hospital, irrespective of age. Whenever two or three of these were gathered together it would not be long before the talk swung round to 'dear old Makins,' and then would be heard one or another of the many variants of his alleged response to an applicant for advice, 'Why can't you let it alone?'

"As a talker Makins was delightful, at his best perhaps in a tête-à-tête. His voice had a deep pitch with a pleasant modulation which made it most restful to the ear, and the matter was always full of delightful human interests with never a trace of malice. He was more prone to smile than laugh, and his smile is unforgettable. He was never in a hurry—in fact he seemed almost ostentatiously free from any temptation in that direction, and in some notes of his on his life he describes himself as naturally lazy; but, as a matter of fact, he was an intense and continuous worker, only very often the results appeared under other names than his own, and he got no credit for them. In truth, his writings smelt somewhat of the lamp at times, and this may well have been due to the conditions hinted at above. It is no exaggeration to describe Makins as one of the best loved men in the profession; but he was never a hunter for popularity, and his many honours came to him unsought. His only reference to himself generally took the form of humorous self-depreciation, but his many friends are glad to know that he was fully aware of his wealth in their affection."

Mr. W. H. Battle writes: "All who know the amount of work which Makins did for his hospital, for English surgery, and for the country, feel that a really great man has passed away. His pleasant manner and clear enunciation saved unnecessary debates on committee with his colleagues. He was ready of access to the student in times of difficulty, and had a universal kindliness of disposition that awoke affectionate regard in those around him."

Sir Charles Ballance writes in particular reference to Sir George Makins's work during the European war: "There are not two surgeries, one of war and one of civil life, but one surgery which is founded on fundamental principles universally applicable. Makins possessed the great asset. He had seen the surgery of suppuration and septic infection before the teachings of Joseph Lister had begun to permeate the profession; so that the terrible suppurations following gunshot injuries were not an entirely new experience to him as to the majority of medical men who volunteered for war service. George Makins was an ideal consulting surgeon. He was somewhat shy, sensitive, and reserved, but the qualities of friendly sympathy, learning, and camaraderie fitted him in a special way to assist the medical officers of the army, who were faced with strange problems entirely foreign to their previous experience. I entered as a student in the same year as Makins, and in those days the only treatment of acute intestinal obstruction was a left lumbar colotomy; though an occasional gastrostomy was performed, gastro-enterostomy and intestinal anastomosis were unknown. In 1882 Makins successfully resected the small intestine in the operation theatre of St. Thomas's. I remember the profound impression caused. Some two or three years before the great war I was talking to William Mayo in the theatre of St. Thomas's where Makins was performing a difficult abdominal operation, and at the end Mayo said, 'That is the man I should choose to operate on me!' Makins has left behind him a goodly company of devoted friends and admirers. He will be remembered with affection for what he has done and for what he was. His influence will persist in the lives of those who knew him. He has now joined the majority but he will continue to live in succeeding generations of St. Thomas's men—unconsciously inspired by his conscientious work and by his life of service to surgery."

Dr. J. A. Murray writes: "On the Executive Committee of the Imperial Cancer Research Fund, Sir George Makins's tenure of the office of treasurer was marked by a great increase in the Fund's resources, obtained without any restriction of the provision for the needs of the investigations. At all times his sympathy with the aims and endeavours of the laboratory staff was complete and manifest. Of his personal kindness I need say no more than that he was one of those who inspire feelings of affectionate respect in those fortunate to come into close contact with him."

ROBERT CALVIN COFFEY

Dr. Robert Coffey, of Portland, Oregon, U.S.A., who lost his life last week in an aeroplane crash, was well known as an abdominal surgeon on both sides of the Atlantic. Last autumn on his way to urological congresses in Paris and Rome, where he was to report on ureteral transplantation, he paid a visit to this country and opened a discussion at the Royal Society of Medicine on the treatment of cancer of the rectum; he was complimented then on the extraordinarily low mortality of the two-stage operation in his hands. Dr. Coffey was a complete believer in the natural powers of the peritoneum, and advocated a particular method of drainage which he called the quarantine pack, with the object of walling off an infected area according to the plan of nature when unassisted by art. He satisfied himself that the drainage by this pack was rarely followed by post-operative adhesions. His best known book deals with the treatment of gastro-enteroptosis, for which he had devised a particular treatment of his own.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

University Degrees Bill

THE House of Lords, on Wednesday, Nov. 8th, considered the University Degrees Bill in committee.

Lord JESSEL said that objections were still raised to the measure by the Universities Bureau of the British Empire. He had, however, arranged for a conference of the parties interested and he hoped that as a result he would be able to bring forward a Bill which would command general agreement. In the circumstances he moved that the Bill be withdrawn.

The Bill was accordingly withdrawn.

Employment of Young Persons

In committee of the House of Commons on Nov. 8th, when the Expiring Laws Continuance "No. 2" Bill was being considered, Mr. RHYS DAVIES moved to leave out from the Schedule, Section 2 of the Employment of Women, Young Persons and Children Act, 1920. The provision to which he objected was, he explained, what was commonly called the two-shift system. It provided that an employer on an appeal to the Home Office, and after satisfying certain conditions, could secure an Order for employing his workpeople contrary to the provisions of the factory laws for eight hours a day at any hour between 6 A.M. and 10 P.M. at night. The provisions applied to young persons from 16 years of age and upwards. In 1921 there were 146 such Orders issued and the number had grown until it reached 227 in 1931, 293 in 1932, and up to Oct. 31st of this year the number was 267. One Order might affect a thousand workpeople and there was no information to show their ages. It was a monstrous state of affairs, he said, that this country was rapidly reaching the position where people were employed on two shifts a day just as if we were in the middle of a period of trade prosperity.—Mr. MCENTEE said he did not believe that there was anyone in any political party in that House who would disagree with the view that it was detrimental to the general health of the young people.—Viscountess ASTOR said there ought to be a national policy for juveniles as far as factories were concerned.

Mr. HACKING (Under-Secretary for the Home Department) said he would like to make it clear that the same people did not work during two successive shifts, nor did the Act make it possible for women, young persons, and children to be employed at night. If the organisations representing a majority of the employers and a majority of the workpeople in any industry made a joint representation against the granting of Orders in that industry then the power of the Home Secretary to make Orders under the Section of the Act ceased as regarded that particular industry. No such representations had been received, and all these Orders, with one exception, were still in existence. It was difficult to ascertain the actual number of persons affected directly or indirectly, but to-day, at a guess, there were about 50,000 or 60,000 persons affected directly or indirectly. But for this extra shift half the shift workers, at any rate, in most cases, would be unemployed. As to the effect on the health of the workers, he could only quote from the report of an investigation made by the Industrial Fatigue Research Board into the two-shift system in certain factories. That report, under the heading of sickness, stated:

"No conclusive statistical evidence has been found of a greater amount of sickness under one system than under the other."

Again the report said:

"When the visits were grouped by departments, it appeared that the *total sickness of the departments on shift work was exactly the same as that of the departments on day work.* It appeared that only half as many days were lost through sickness by the shift workers as by the day workers and that there were only about half as many visits to the first-aid room."

That really looked, on balance, as though these young persons engaged on the two-shift system were in better health than those engaged on ordinary day work.

The amendment was rejected by 253 votes to 57.

Criminal Use of Firearms

Mr. HACKING moved the second reading of the Firearms and Imitation Firearms (Criminal Uses) Bill. He said that by this measure it was intended to make it an offence for a person to use, or attempt to use a firearm, or imitation firearm, either for the purpose of resisting the lawful apprehension or detention of himself or of any other person, and they also wished to make it an offence if a person was found in the possession of such an article when committing, or when arrested for, the offences specified in the Schedule to the Bill. It might be complained by critics that the Government were legislating ahead of necessity. It was true that gunmen were not so numerous in this country, or so daring as they were in other parts of the world, but the desire was to prevent this profession from becoming a popular or a remunerative one.

The Bill was read a second time.

Local Government Bill

Sir E. HILTON YOUNG (Minister of Health) moved the second reading of the Local Government Bill. He said it was a big measure, the purpose of which was the consolidation of the law of local government for England and Wales. It did not cover, in general, the City of London, which was dealt with by its particular statutes. The magnitude and the utility of the Bill was shown by the fact that it repealed, wholly or partially, not less than 900 sections of other Acts of Parliament and 33 schedules, and that it repealed 47 Acts wholly, thus effecting a very great simplification of the law and, incidentally, a very great economy in the conduct of public business. This was an instalment of a long process of simplification, classification, and consolidation of local government law which had been in progress now for a good many years. They had now codified the poor-law, the housing law, the law relating to the sale of food and drugs, and the law relating to national health insurance. He hoped after the passing of the present measure no long period would elapse before there was another and final instalment of this codification in a Bill to codify the law relating to public health. That would be the biggest task of all, because the law of public health needed codification almost more than any other section relating to local authorities and their powers.

The Bill was read a second time.

National Health Insurance

POSITION OF UNEMPLOYED PERSONS

In the House of Commons on Friday, Nov. 10th, Mr. GEORGE HALL moved:

"That, in the opinion of this House, the hardships arising from long-continued unemployment will be unduly aggravated by denial of the benefits conferred by the National Health Insurance and Contributory Pensions Acts, and, therefore, provision should be made for a State contribution towards safeguarding the position of those insured persons who are victims of the present industrial depression."

The full effect of the Act was, he said, not realised when the measure was passing through that House. Whatever the cost to the State to maintain these persons in insurance it should be readily agreed to. The cost to the Exchequer of securing pension rights for the next three years was estimated at £450,000, or £150,000 a year. If there was an additional £50,000 or £30.000 to keep these persons in medical benefit it would mean a cost of £200,000 a year. He appealed to the Government to reconsider their attitude.

Major Muirhead asked the Minister whether something might not be done to ease the situation by extending the period of redemption of arrears.

Mr. Buchanan said that medical benefit was important, and he wished to say that the medical profession was about the only one which had risen in his estimation since he entered Parliament. He thought that the services rendered by the ordinary panel doctor were worthy of the highest commendation from every decent man and woman. The panel doctors from one end of the country to the other still, in very difficult and trying circumstances, rendering in the main services of a very noble order. But he did not want the House to regard this question merely as a question of medical benefit. There was a tendency to make it a question of medical benefit alone, and to make it appear as if it were a ramp by the medical profession to safeguard their panel money. There were other benefits involved in addition to medical benefit. He feared even more than Mr. Hall the position of the local authorities in this matter. He would not be so much annoyed about the loss of medical benefit if he was sure that the poor people would even get the services of the public assistance doctors; but he feared that they would get no doctors at all; that in the general turnover many of them would be crowded out and would, practically speaking, get no medical benefit whatever. To-day the average doctor who did poor-law work was overworked, and the public assistance authorities were grumbling about high rates. He took it that to perform this work properly additional doctors and additional staff might be required. He feared that the authorities might undertake to do this work without the added staff necessary, and that numbers of decent men and women would in consequence not receive any treatment at all.

THE MINISTER'S STATEMENT

Sir Hilton Young (Minister of Health) said that the whole purpose of the Act of 1932 was to give solvency to a scheme which was threatened with insolvency by restoring the balance between contributions and benefits. The cause of the enfeeblement of the health insurance scheme was the failure of contribution income owing to the steady increase of unemployment. Immediate action had to be taken to protect the rights of insured persons. Very big concessions had already been made in order to alleviate the position as regarded arrears. As long as a man remained in insurance he might draw his medical benefit and he might draw his maternity benefit in spite of a year of unemployment, apart from the payment of any arrears at all. A minimum of merely 20 weeks of work and contribution would always give an insured person some cash benefit. With a view to giving further assistance to those who were falling into arrears, after consulting his advisers, he thought it was possible to extend this period of grace to March 31st in the year following. That would deal with many or most of the cases of hardship. Those who went out of insurance at the end of this year did not lose medical treatment. They would then receive precisely the same medical treatment as any unemployed person who had not been in insurance would receive. It would be the duty and task of the local authorities to see that the services were adequate and the Ministry would mak sure that they did. The cost would fall upon loc authorities and he believed it had been very muc exaggerated. The Government Actuary's estimat in 1932 of the number of persons affected was 80,00 but employment had somewhat improved since th date. In many small areas such persons woul continue to be attended by precisely the same docto as attended them when they were on the pane In larger areas, where there were well-organise public health and public assistance services, it woul be possible to make use of the staff and scientifi equipment of the new public hospital organisatio The fact that these persons would have no free choic of doctor was a difficulty, but it could be met i this way. It was open to any authority to mak use of a panel system for its public assistance organisa tion. Experiments had been made in that directio in Newcastle-on-Tyne, East Ham, and Wiltshir If any authority desired to act in this way the sanctio of the Ministry of Health would not be lacking.

Sir Richard Meller said he thought that the Hous would be wise to maintain the insurance principl of the health insurance scheme. He thought tha the sacrifices which had been made by the approve societies went as far as they could go, consisten with the solvency of the fund.

Sir Francis Fremantle said he would no depreciate the work of the poor-law medical officers but there were certain parts of the country wher local authorities and public assistance committees ha inherited old appointments and systems from th old guardians.

Those fixed appointments, said Sir Francis, were i certain cases by no means satisfactory; the poor-la authorities got by no means the best men in the professio locally to undertake this poorly paid and hard-worke employment. The result, as everybody knew, was tha the poor-law medical service was not the equivalent o the panel service. That was not because the individual were different; they knew that great objections ha often been raised in that House to some parts of th panel practice. But there was this very great difference that under the poor-law there was a fixed definite appointment of one man, or of one or two men, in any particula area, and everyone had to go to the appointed officer, and no other. Under the panel system they had established the choice of doctors, and that was the one thing that was an element of progress and the one thing that enabled the service to adapt itself to requirements automatically, because if the medical man did not give the service that was required by the patient he could change his doctor. They were delighted to hear from the Minister of Health that there were three areas already where the public assistance committees had undertaken the open choice methods of medical attendance. Where that happened they were, he hoped, arriving at an ideal which was being worked out—namely, that there should be only one system of medical attendance under the State, that was the open choice method, open to all medical practitioners who undertook the terms of the panel. This was really a reform of the greatest magnitude in the improvement of the medical service and the health of the people in the whole of the country, and it had been adopted by mutual agreement in three areas. Would it be possible for the Minister to hasten its general application to the rest of the areas?

If, he continued, the Minister could get the system adopted throughout the country there would be an enormous improvement in the general health of the people, and he believed that it would do away to a large extent with the grievance that otherwise existed that people who had been insured under one system or the other, because they had fallen out of the jealously guarded system of insurance, had to go to another set of medical men who did not understand their conditions and had not their dossier over which they had no right of choice.

Mr. Arthur Greenwood said that the Opposition would have preferred the Government to have kept national health insurance on its own financial basis, but having lost its financial stability they would not have regarded it as destructive of that principle if the State had come to the assistance of those who were now to be deprived of benefits which they had enjoyed in the past. What they would get by a continuation of this scheme was a permanent pauperisation of people who were the victims of circumstances over which they had no control.

"A SLUR ON THE DISTRICT MEDICAL SERVICE"

Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replying to the debate, said that the scheme did not mean that 80,000 persons must be thrown on to the medical side of public assistance. It would probably mean that about 20,000 or 30,000 would at some time of the year have recourse to the district medical service. He really must challenge Sir F. Fremantle, who had suggested that the district medical service was inferior to the panel service. He denied that, for the simple reason that in, for instance, any county borough divided into medical districts, the general practitioners themselves carried on the district medical work. It was a slur on the district medical service to say that that service was inferior to the panel service. In the great majority of cases people were treated by the same doctors as those in the panel service.

Mr. LOGAN: I take it that it is the Minister's intention to set up a State service, or local service of panel doctors, to deal with these particular cases. If that is so, what about those doctors who are already occupying the position, and what compensation will be given them for disturbance of office?

Mr. SHAKESPEARE said that the Minister had shown that there were three places where a panel system was in operation. He was putting no bar to the extension of that principle. It was in the experimental stage, but if there was a real objection to it, his right hon. friend would do his best to meet what might be a real difficulty.

The motion was negatived by 161 votes to 48.

Hospitals and Motor Accidents

In the House of Lords on Tuesday, Nov. 14th, when the Road and Rail Traffic Bill was being considered in committee, Lord LUKE moved the following new Clause:—

Section 36 of the Road Traffic Act, 1930 (which relates to requirements in respect of policies of insurance) shall be amended by substituting for subsection (2) thereof the following subsection: (2) Where any payment is made (whether or not with an admission of liability) by—(*a*) an authorised insurer under or in consequence of a policy issued under this Part of this Act; or (*b*) the owner of a vehicle in relation to the user of which a security under this Part of this Act is in force; or (*c*) the owner of a vehicle who has made a deposit under this Part of this Act; in respect of the death of or bodily injury to any person arising out of the use of a motor vehicle on a road or in a place to which the public have a right of access, and the person who has so died or been bodily injured has to the knowledge of the authorised insurer or such owner as the case may be received treatment at a hospital whether as an in-patient or as an out-patient in respect of the injury so arising there shall also be paid by the authorised insurer or such owner to such hospital the expenses reasonably incurred by the hospital in affording such treatment after deducting from such expenses any moneys actually received by the hospital in payment of a specific charge for such treatment not being moneys received under any contributory scheme: Provided that the amount to be paid by the authorised insurer or such owner shall not exceed fifty pounds for each person so treated as an in-patient or five pounds for each person so treated as an out-patient.

For the purposes of this subsection the expression "hospital" means an institution (not being an institution carried on for profit) which provides medical or surgical treatment for in-patients and the expression "expenses reasonably incurred" means—(*a*) in relation to a person who receives treatment at a hospital as an in-patient, an amount for each day such person is maintained in such hospital representing the average daily cost for each in-patient of the maintenance of the hospital and the staff thereof and the maintenance and treatment of the in-patients therein; and (*b*) in relation to a person who receives treatment at a hospital as an out-patient reasonable expenses actually incurred.

He said that at present many hospitals situated near the great highways were occupied with motor-accident cases to the exclusion of those patients for whom the hospitals were originally provided. A clause in similar terms to the one he moved had been included in Lord Danesfort's Road Traffic (Compensation for Accidents) Bill, but as that Bill could not be passed at an early date, and as the hospitals could not wait, he hoped that the Government would agree to this new clause being inserted in the present Bill.

Lord GREVILLE, as treasurer of one of the larger London hospitals, asked the House to accept this new clause. In 30 per cent. of the cases they did not receive any payment at all for motor-accident treatment. The limit at present was £25, but in one case the cost to the hospital was £125.—The Earl of DERBY said he could substantiate what had been already said. At present the treatment of motor-accident cases was an intolerable burden on the hospitals. He thought, however, that the present Bill was an inappropriate measure in which to incorporate such a clause. The clause was incorporated in Lord Danesfort's Bill and he hoped that that Bill would be passed into law.—Earl HOWE said that the voluntary hospitals of the country were out of pocket in respect of the cost of the treatment of these cases to the extent of no less a sum than £150,000 a year at least. But if the House passed this clause they would still not completely cure the the trouble. This clause might mean an increase in insurance premiums all round.—The Marquess of READING said as far as he understood the position, Lord Danesfort's Bill had not the faintest chance of being passed in the House of Commons.—The Earl of DONOUGHMORE and Lord PONSONBY supported the new clause.

The Marquess of LONDONDERRY, replying for the Government, said that they must all have sympathy with the object of the new clause, but he felt that it was not appropriate to the present Bill. This was a measure for the better regulation of goods traffic, and the House of Commons might feel that a provision of this kind was not germane to the Bill.

The new clause was agreed to without a division.

HOUSE OF COMMONS

THURSDAY, NOV. 9TH

The Offence of Sleeping Out

Mr. MCENTEE asked the Home Secretary the result of his inquiry as to the circumstances in which it was the practice of the police to charge persons with the offence of sleeping out.

Mr. MANDER asked whether the Home Secretary's attention had been called to Police Order No. 565, issued by the chief constable of Wolverhampton; and whether he would see that the matter was treated throughout the country on the same lines.

Brigadier-General SPEARS also asked a question on the same subject.—Sir J. GILMOUR (Home Secretary) replied: My attention has been called to the police order to which Mr. Mander refers. The replies which I have received from chief officers of police indicate that persons are not as a rule arrested and charged under this provision in the Vagrancy Act unless there is ground for thinking that they are of bad character, or they are found in circumstances likely to cause danger or nuisance to the community. I am satisfied that it is the general practice to use this power sparingly, but I propose to consider the question whether it is possible to define more closely the circumstances in which proceedings are necessary or desirable.

Licensing

Viscountess ASTOR asked the Home Secretary whether it was the intention of the Government to introduce legislation to give effect to the report of the Royal Commission on Licensing.—Sir JOHN GILMOUR replied: I have nothing at present to add to my answers to previous questions on this subject. No such legislation is contemplated in the immediate future.

Six-loom Weaver System

Mr. **Rhys Davies** asked the Home Secretary if he would request the appropriate medical authorities to conduct an investigation into the effects on the physique of women employed in the textile industry of Lancashire on the six-looms-per-weaver system, and issue a report thereon.—Sir **John Gilmour** replied: The Factory Department will carefully watch for any ill-effects on health which may appear to arise from this system, but I am advised that a special investigation at the present time would not be likely to lead to any definite results. The system has only recently been introduced and there are no sufficient data on which conclusions could be based.

Sir F. **Fremantle**: Has this matter been referred to the Industrial Health Research Committee, whose business it is to look into these matters?

Sir J. **Gilmour**: I am not sure of that.

Slum Clearance

Sir **Francis Fremantle** asked the Minister of Health the number of local housing authorities that had not submitted to him programmes of slum clearance; what steps he proposed to take to secure effective action in such cases; and whether he was satisfied with the progress being made throughout the country to secure clearance of all slum areas within five years.—Sir **Hilton Young** replied: There are 1717 local housing authorities, and of these 1341 are county district councils. I have received 1176 returns. There are thus 541 outstanding, including 418 from county district councils. In any case in which a local authority has submitted no programme, and I have prima facie evidence that a programme should be submitted, I shall, after communications of the usual sort, proceed to secure the holding of a public local inquiry into the position under Sections 35 or 52 of the Act. As to the last part of the question, in general the local authorities' programmes are satisfactory.

Sir **Francis Fremantle**: Does the right hon. gentleman think he will be able to secure clearance of all slums in five years?

Sir **Hilton Young**: The answer is just what I have said; the programmes are a satisfactory reply to the request that I have addressed to the local authorities.

Major **Nathan** asked the Minister of Health whether he had received any definite programme of the unhealthy areas to be cleared or improved by the London County Council under the provisions of the Housing Act, 1930, during the next five years, as called for in his Housing Circular 1331.—Sir **Hilton Young** replied: I received early in August a comprehensive report from the county council containing a programme for the displacement and rehousing within a period of ten years of a quarter of a million persons. I am expecting a supplementary and more detailed report shortly. I would remind the hon. Member that it was recognised in Circular 1331 that the time needed to remedy the present deficiencies in London will be longer than in other areas.

Housing

Mr. H. **Williams** asked the Minister of Health the total number of houses constructed during the six months ended Sept. 30th, 1933, and for comparison, the corresponding number during the same period of the previous year.—Sir **Hilton Young** replied: The total number of houses completed in England and Wales during the six months ended Sept. 30th, 1933, was 113,332. The corresponding number for the six months ended Sept. 30th, 1932, was 95,515. The increase in comparison with the earlier period is thus 17,817 or 18·6 per cent. These numbers exclude houses of a rateable value exceeding £78 (£105 in the metropolitan area.)

Sir **Francis Fremantle** asked the Minister of Health the number of houses for which guarantees had been given by the Government under Section 2 of the Housing (Financial Provisions) Act, 1933.

Major **Nathan** asked the Minister of Health whether he had received any progress returns from local authorities in connexion with their administration of the Housing (Financial Provisions) Act, 1933; and, if so, what were the respective total numbers of houses completed at a recent date in the metropolitan police district and in the rest of England and Wales with the assistance of guarantees under that Act.—Sir **Hilton Young** replied: I have received proposals from local authorities for giving guarantees in respect of approximately 13,000 houses. I shall not, however, be in possession of information as to the numbers of houses for which guarantees have been given until I receive the returns due from local authorities on Dec. 31st next.

Mr. **Curry** asked the Minister of Health the number of houses built in England and Wales in each of the years ended Sept. 30th, 1932, and Sept. 30th, 1933, by local authorities, by State aid, private enterprise with State aid, and private enterprise without State aid.—Sir **Hilton Young** replied: The total number of houses built without State assistance in the year to Sept. 30th, 1933, which is 167,880, breaks the record. The following statement gives particulars of houses provided with and without State assistance in England and Wales.

Year ended Sept. 30th.	With State *assistance.*		Without State *assistance.*		Totals.
	By local authorities	By private enterprise	By local authorities	By private enterprise	
1932	66,434	2,656	2,056	130,830	201,976
1933	47,977	2,456	1,236	166,644	218,313

The Retail Price of Milk

Mr. **Lambert** asked the Minister of Agriculture what action was intended to be taken by the Milk Marketing Board in order that permitted increases in the retail price of liquid milk would not so reduce consumption as to further intensify the glut already existing in milk production.—Mr. **Elliot** replied: It is in the interests of milk producers as a whole that the aggregate returns from the sale of milk for liquid consumption and for manufacture should be as large as possible, and I am confident that the Board will make the best use of their powers to ensure that the price position does not lead to reduced consumption in the liquid milk market.

Shortage of Water-supply

Mr. **Curry** asked the Minister of Health if complaints of a shortage of water-supply were received from any local authorities during the past summer; and, if so, how many such complaints were received.—Sir E. **Hilton Young** replied: Very few actual complaints were made by local authorities to the Ministry. In some 30 instances investigations were made by my officers in addition to inquiries as to the position made by inspectors at all visits to local areas. The towns generally met the drought in a successful manner, the difficulties being mainly in rural areas.

Mr. **Richard Evans** asked the Ministry of Health whether, in view of the hardships caused by the failure of water-supplies in many areas during the summer, he would consider making grants to enable local authorities to proceed with water schemes now held up on the ground of cost.—Sir E. **Hilton Young** replied: I am anxious that every effort should be made to improve the water-supplies in areas inadequately served, and I am aware that in some cases, generally in rural areas, the difficulty is one of cost. I may perhaps remind the hon. Member of the powers of financial contribution conferred on rural district councils and county councils by the Local Government Act, 1929.

Disposal of London Refuse

Mr. **McEntee** asked the Ministry of Health whether the Advisory Committee on London Refuse had reached any conclusions for the improvement of the disposal of refuse; and, if so, if he would state the nature of the proposals.—Sir E. **Hilton Young** replied: I am informed that the Committee have done a large amount of work but have not yet completed their survey of present conditions, and that they hope to do so and to make their report on the disposal of house refuse possibly by next Easter.

MONDAY, NOV. 13TH

Medical Branches of Defence Services

Sir Vivian Henderson asked the Prime Minister what action he proposed to take on the report of the Committee on the Medical Branches of the Defence Services.—Mr. MacDonald replied: Certain aspects of the report have been felt to require further consideration; but my hon. friend may rest assured that there will be no avoidable delay in reaching a conclusion.

TUESDAY, NOV. 14TH

High Temperature in Deep Mines

Mr. Tinker asked the Secretary for Mines if His Majesty's inspectors had drawn his attention to the high temperature prevailing in the deep mines, in some instances exceeding 100°; and if he would consider amending the Coal Mines Act so as to prevent men working where the temperature exceeded a certain point.—Mr. E. Brown replied: I would refer the hon. Member to the answer given on July 11th (see The Lancet, July 15th, p. 161), when I said that the question of high temperatures in some of the deeper mine workings is constantly engaging the attention of the inspectors, and is also being studied by the Hot and Deep Mines Committee. It is true that the air (dry bulb) temperature in some deep workings reaches, and may slightly exceed, 100° F., but the associated wet bulb temperature seldom exceeds 80° F., and it is the latter that is the more important when considering the effect of temperature upon the health of the workers. The investigations of the Hot and Deep Mines Committee have shown that acclimatised men can work without undue fatigue in wet bulb temperatures of over 80°, and there is no evidence that such work does any serious injury to the men's health or shortens their lives

Medical Officers on Cruising Liners

Sir Bertram Falle asked the President of the Board of Trade what steps were taken by his department to see that those liners which catered for the holiday-cruise traffic provided medical staff of qualified surgeons and physicians, dispensers, and certified nurses proportionate to the number of passengers and crew of the ship.

Sir Park Goff asked the President of the Board of Trade whether a physician as well as a surgeon was provided by the ship for the service of passengers and crew of cruising liners; and how many surgeons, physicians, dispeners, and certified nurses were provided, either optionally or by regulation, for the protection of a complement of 750 persons, consisting of 500 passengers and 250 crew, carried by a liner on a holiday cruise.—Mr. Runciman replied: Vessels employed on foreign-going holiday cruises, and having 100 persons or more on board, are required by law to carry a duly qualified medical practitioner. Such practitioners are qualified both in medicine and surgery. The law does not require dispensers and certified nurses to be carried in any ship, but I am informed that a nurse is usually carried in a cruising vessel, and that in a number of cases a hospital attendant is also carried, and sometimes a second doctor.

Slum Clearance

Mr. Spencer asked the Minister of Health in how many instances the councils of county boroughs and county districts, respectively, had informed him of the absence of slums within their areas.—Sir Hilton Young replied: The respective figures are 4 and 393.

Vaccination and Meningitis

Mr. Groves asked the Minister of Health whether any, and, if so, how many, deaths from meningitis following vaccination had occurred in England and Wales during the present year; where and at what age such cases occurred; whether inquests were held in such cases; and, if so, what were the verdicts at the inquests.—Sir Hilton Young replied: Three such deaths have been reported, one each at Carshalton, Alverstoke, and Barham. The ages were 2 months, 11 weeks, and 4½ months. The verdicts were respectively, "meningitis due to an organism which may have entered the system at the site of vaccination performed on Sept. 1st, 1933"; "meningitis," and "natural causes, viz., meningitis." Inquiries were made in each case, and I am advised that there is no ground for disagreement with the verdicts.

MEDICAL NEWS

University of Oxford

At a congregation on Nov. 7th the following were elected examiners: anatomy, Mr. A. B. Carleton; physiology, Prof. Samson Wright; pathology, Prof. M. J. Stewart *; forensic medicine and public health, Dr. A. L. Ormerod *; medicine, Sir Charlton Briscoe; surgery, Mr. W. H. Ogilvie *; and obstetrics, Mr. A. H. Richardson.* Dr. J. L. Birley will be examiner in medicine between 1934 and 1936 (Hilary terms). During the same period the clinical examiners will be: medicine, Dr. F. G. Chandler and Dr. J. J. Conybeare; surgery, Mr. E. A. Crook * and Mr. L. R. Broster *; and midwifery, Mr. G. F. Darwall Smith * and Mr. Wilfred Shaw.* *The asterisks indicate renominations.*

University of Cambridge

The Raymond Horton-Smith prize for 1932–33 has been awarded to Dr. George Durant Kersley for a thesis on fragilitas ossium and allied conditions. Proxime accessit: Dr. John Harding Baynes Martin.

Royal College of Surgeons of England

An ordinary meeting of the council was held on Nov. 9th, with Sir Holburt Waring, the president, in the chair. A resolution of condolence was passed on the death of Sir George Makins, president of the College from 1917 to 1919.

Dr. John Beattie, associate professor of anatomy in the McGill University, Montreal, was appointed conservator of the museum and director of research, in succession to Sir Arthur Keith.

A diploma of Fellowship was granted to Thomas Francis Todd, of Guy's Hospital.

Diplomas of membership were granted to the candidates whose names appeared in our issue of Nov. 4th (p. 1069) as recipients of the L.R.C.P. and Ng Kong Kai, Univ. Coll. Diplomas in public health were granted to candidates whose names appear on the same page.

Royal College of Physicians of Edinburgh

A quarterly meeting of the College was held on Nov. 7th, Dr. Edwin Bramwell, the vice-president, in the chair. Dr. Eric Farquharson Dott (Edinburgh), Dr. William Leslie Burgess (Dundee), and Dr. Ronald Malcolm Murray-Lyon (Edinburgh) were introduced and took their seat as Fellows. Dr. Arthur Spencer Paterson (Hildenborough, Kent) was elected a Fellow of the College. Certificates of qualification to lecture were conferred upon Dr. John Eason and Dr. W. A. Alexander. The Hill Pattison-Struthers bursary in anatomy and physiology was awarded to Nathan Herbert Solomon, and the Hill Pattison-Struthers bursary in clinical medicine to Maurice Goldfar.

Royal Faculty of Physicians and Surgeons of Glasgow

At the annual meeting of the Faculty, held on Nov. 6th, Dr. R. Barclay Ness, on demitting office as president, reviewed the activities of the Faculty during the last two years, and expressed his satisfaction at the large increase in the number of new Fellows. The following office-bearers were elected for the ensuing year: president, Prof. J. M. Munro Kerr; visitor, Prof. Archibald Young; hon. treasurer, Dr. J. H. MacDonald; hon. librarian, Dr. W. R. Snodgrass. The members of the Council are the officers, Mr. G. H. Edington (representative to the General Medical Council), Dr. J. F. Fergus, Dr. John Henderson, Dr. A. Brown Kelly, Dr. R. Barclay Ness, Mr. John Patrick, Dr. W. J. Richard, Mr. John Rowan, Mr. J. Forbes Webster, and Mr. R. F. Young.

Harveian Society of London

The Buckston Browne prize of this society has been awarded to Dr. Lionel S. Penrose, research medical officer at the Royal Eastern Counties Institution, Colchester, for an essay on the influence of heredity in disease.

Royal Society

Foulerton Research Studentship.—The president and council of the Royal Society propose to make an appointment to this studentship, which will fall vacant on April 1st, 1934. The student will be required to devote his whole time to research in medicine or the sciences related to it, though in exceptional cases the holder of a paid teaching post may be considered. The full stipend of the studentship is £700 per annum, and the appointment is for three years. Full particulars will be found in our advertisement columns.

Consultants and Specialists at L.C.C. Hospitals

The central public health committee of the Council has decided that consultants and specialists, when called upon during the quarter under review to perform emergency work in groups of hospitals, &c., other than that to which they have been normally allocated, should receive remuneration at the rate of £2 12*s*. 6*d*. for each such emergency visit.

British Social Hygiene Council

An extraordinary general meeting of the Council will be held on Monday, Dec. 4th, 1933, at 3 P.M., at the offices of the Council, Carteret House, Carteret-street, London, S.W.1, when the Rt. Hon. L. S. Amery, M.P., will be in the chair. The following resolution will be proposed by Mrs. Ogilvie Gordon, D.Sc.: "The Council desires to place on record its view that the imposition of barriers to early marriage is incompatible with its declared policy of promoting the removal of conditions conducing to promiscuity and of preserving and strengthening the family as the basic social unit."

Chelsea Clinical Society

On Tuesday, Nov. 21st, Mr. Zachary Cope is opening a discussion at this society on the simulation of acute abdominal disease, and on Dec. 19th, the last meeting for this year, a discussion on hypnotic suggestion will be opened by Dr. A. G. Buchanan. Speakers for 1934 include Dr. Ronald Jarman (recent advances in anæsthetics), General Bruce (the Mount Everest expedition), Dr. J. A. Ryle and Dr. R. R. Armstrong (treatment of lobar pneumonia), Mr. E. G. Boulenger (the zoo aquarium), and Squadron-Leader P. C. Livingston (ophthalmic notes on the air force pilot overseas). The hon. secretaries of the society are Mr. Andrew Rugg-Gunn and Mr. H. Paxton Bayliss, 35, Harley-street, W.1. All the meetings will be held at the Hotel Rembrandt, Thurloe-place, S.W.

British College of Obstetricians and Gynæcologists

The quarterly meeting of the Council was held on Nov. 4th, with Dr. J. S. Fairbairn, the president, in the chair. Regulations for a diploma to be styled Diploma of the British College of Obstetricians and Gynæcologists (D.C.O.G.) were passed with a view to their early publication.

The following were elected to the membership of the College: Catherine Anderson, John Lloyd Davies, Calvert Mertin Gwillim, Arthur Benyon Nash, and George Milburn White. The president formally admitted to the membership: Alexander Allan, John Barnard Blaikley, Harold Carter, Robert Leslie Dodds, John Douglas Flew, Tom Ivor Hughes, William George Mackay, Patricia Massey, Douglas Ashley Mitchell, Edwin Moody Robertson, Walter Salisbury, Roy McGregor Saunders, Donald Robert Louis Stevenson, Henry James Thomson, Beatrice Turner; and (*in absentia*) John Stewart Henry, Peter Joseph Kearns, Margaret Mary Nolan, W. Philpott Newell, Walter Netley Searle, George Drury Shaw, John Ross Vant, and George Henry Mahony. After the admission ceremony Lord Riddell presented to the College portraits of the president, Dr. Fairbairn, and the hon secretary, Prof. W. Fletcher Shaw, which he had commissioned Mr. J. B. Souter to paint. Sir Ewen Maclean, the vice-president, accepted the portraits and expressed the thanks of the College to Lord Riddell.

The third dinner of the College was held at the Langham Hotel, London, on Nov. 3rd, when the presidents of the three Royal medical corporations of Scotland were the guests. The toast of the guests was proposed by Dr. H. Russell Andrews, vice-president, and the toast of the College was proposed by the president of the Royal College of Surgeons of Edinburgh.

Yorkshire Association of Graduates of the University of Glasgow

The annual dinner of this association will be held in the Queen's Hotel, Leeds, on Friday, Nov. 24th, at 7.30 P.M. Sir Robert Rait, principal of the university, will be the chief guest of the evening. The hon. secretary is Dr. William MacAdam, 40, Park-square, Leeds, 1.

Instruction for D.P.M.

A series of lectures and practical courses will be given in January and February (Part I.), and in March and May (Part II.), 1934, at the Maudsley Hospital, Denmark-hill, London, S.E., primarily to candidates for diplomas in psychological medicine. The lecturers and demonstrators are Dr. F. L. Golla, Captain S. A. Mann, D.Sc., Mr. W. Le Clark, Dr. Henry Devine, Dr. Edward Mapother, Prof. F. A. P. Aveling, D.Sc., Dr. F. C. Shrubsall, Mr. Charles Geary, Dr. Thomas Tennent, Mr. Foster Moore, Dr. Bernard Hart, Dr. A. J. Lewis, Dr. Mildred Creak, Sir Hubert Bond, and Dr. W. Norwood East. Particulars of the series which begins on Jan. 1st may be had from Dr. Golla, hon. director of the medical school, at the hospital.

Fellowship of Medicine and Post-Graduate Medical Association

An all-day course in proctology will be given at St. Mark's Hospital from Nov. 20th to 25th. From Nov. 21st to Dec. 7th six lecture-demonstrations will be given on Tuesday and Thursday evenings at 8 P.M. at the British Red Cross Clinic for Rheumatism. The subjects of other forthcoming courses include: diseases of infants at the Infants Hospital, Vincent-square, S.W. (Nov. 27th to Dec. 9th); and dermatology at the Blackfriars Skin Hospital (Nov. 27th to Dec. 9th). A debate has been arranged to take place on Dec. 7th, at 8.30 P.M., at the lecture hall of the Royal Society of Tropical Medicine and Hygiene, Manson House, 26, Portland-place, W. The motion will be that operations for the removal of tonsils are too often performed without adequate cause, and all members of the medical profession are invited to be present. The secretary of the Fellowship may be addressed at 1, Wimpole-street, London, W.1.

University of Durham College of Medicine

At the annual court of governors of the College, held in Newcastle-on-Tyne on Nov. 1st, Mr. R. G. E. Mortimer presiding, a committee was appointed to consider the recommendations of Sir Amherst Selby-Bigge, to emend the constitution of the College. This committee consists of eight members of the court: Lord Armstrong, Dr. J. W. Leech, M.P. (Lord Mayor), Mr. J. R. Andrews, Mr. Charles Williams (director of education), Sir Joseph Reed (treasurer), Sir Robert Bolam (chairman of council), Prof. Stuart McDonald, and Dr. W. E. Hume—the four last being members of the council. The report of the committee appointed in July to confer with Prof. H. J. Hutchens was considered, and it was resolved "that further negotiations for a settlement with Prof. Hutchens must be conditional on his undertaking, as a term of the settlement, to abandon any legal proceedings in the matter of all his claims; but that, subject to this condition, the council would be justified in negotiating a final settlement with him on terms equivalent to those suggested in the committee's report." It is understood that the offer will be an annuity of £650 a year, the Heath professorship falling into abeyance.

A Medical Prime Minister

Mr. Godfrey Martin Huggins, who has assumed office as prime minister of Southern Rhodesia, is consulting surgeon to the Salisbury Hospital and a Fellow of the Royal College of Surgeons of England. Born at Bexley, in Kent, he qualified from St. Thomas's Hospital in 1906, and was subsequently appointed medical superintendent of the Hospital for Sick Children, Great Ormond-street. In 1910 he went out to Rhodesia and started practice in Salisbury, but during the late war he returned to Europe and saw service in France. He was also for some time surgeon to the military hospitals at Brighton and at Valetta in Malta. Mr. Huggins is 50 years of age and has been a member of the Southern Rhodesian legislative assembly since its formation.

Royal Northern Hospital

King Edward's Fund for London has made an emergency grant of £5000 to this hospital on condition that it raises a like sum of money before the end of the year.

Hospital Sunday for Coventry

In addition to its Hospital Saturday Fund Coventry is about to start a Sunday Fund on behalf of the Coventry and Warwickshire Hospital.

Wellcome Museum of Medical Science

This museum, which has been closed for the past two years, will be open again to students on and after Monday next, Nov. 20th, at the Wellcome Research Institution, 183–193, Euston-road (weekdays 10 to 5.30, Saturdays 10 to 12.30). The museum is available for all who are engaged in the study and practice of medicine; also, by arrangement with the director, for teachers who may wish to demonstrate to their classes in any of the sections.

Royal Institute of Public Health.

The next annual congress of this institute will be held at Norwich from May 15th to 20th, 1934. The work of the congress will be divided into the following sections: state medicine and industrial hygiene: women and children and the public health: tuberculosis; veterinary medicine and agriculture; and pathology and bacteriology. The address of the institute is 23, Queen-square, London, W.C.1.

Biochemical Society

A meeting of this society is being held at University College, Gower-street, London, to-day, Friday, Nov. 17th, at 3 P.M. There will be communications on, among other subjects, the configurative relationship of thyroxine and tyrosine (C. R. Harington and others); the permeability of red cells (H. Davson); the distribution of vitamin A in the organs of the normal and hypervitaminotic rat (A. W. Davies and T. Moore); and the absorption spectrum of aqueous and vitreous humour (E. R. Robertson). One of the two hon. secretaries is Prof. H. Raistrick, of the London School of Hygiene and Tropical Medicine, Keppel-street, W.C.1.

Symposium on Bread and Milk

The symposium arranged by the food group of the Society of Chemical Industry will be held at B.M.A. House, Tavistock-square, London, W.C., on Nov. 23rd and 24th. Prof. W. W. Jameson will preside at the first session at 2.30 P.M. on Thursday, when papers on milk will be read by Prof. H. D. Kay (the improvement of the nation's milk-supply); Prof. A. J. Kluyver, of Delft (metabolism of the lactic acid bacteria and their rôle in butter-making); Prof. A. D. Orla-Jensen (activators for the growth of lactic acid bacteria): and Mr. F. C. Minett and Mr. E. J. Pullinger (disease-producing organisms in milk). Sir John Russell, F.R.S., director of the Rothamsted Experimental Station, will be the chairman of the second session which meets at 10 A.M. on Friday, the 24th. Papers will be read by Prof. J. R. Katz, of Amsterdam (the gelatinisation and retrogradation of starch); Mr. Holger Jorgensen (the Danish Home-grown Wheat Committee): Prof. Max Samec, of Ljubljana (some technically important properties of starch in connexion with its constitution); Mr. H. G. Bungenberg de Jong, of Utrecht (gluten formation): and Mr. C. W. Brabender, of Duisburg (fundamentals of the determination of quality of wheat flours by mechanical means). The third session will be held at 2.30 P.M., when the chairman will be Prof. H. E. Armstrong, F.R.S., and papers will be read by Prof. J. C. Drummond, and by Prof. G. S. Wilson and Mr. M. P. Cowell, dealing with the comparative nutritive values of raw and pasteurised milk. Other communications will be made by Mr. J. Vargas Eyre (the value of yeast in bread): Mr. D. W. Kent Jones (bleaching and improving of flour); and Mr. William Jago (the nutritive value of bread). A dinner will be held in the evening at 7.15 for 7.30 at the Trocadero Restaurant, Shaftesbury-avenue, W., when Mr. Geoffrey Shakespeare, Parliamentary Secretary to the Ministry of Health, will be chief guest. Further particulars may be had from the hon. secretary, food symposium, Society of Chemical Industry, 46, Finsbury-square, London E.C.2.

Manchester Medical Ball

The annual Manchester medical ball will be held in the Midland Hotel, Manchester, on Feb. 22nd. The hon. secretary, Mr. B. W. Spurgin, may be addressed at the Medical School, Manchester.

King's College Hospital

At the recent festival dinner the Earl of Athlone, in proposing the toast of the Hospital Medical School, said that whereas in 1913 there were only 54 students in the school, there are now 349. There still remains a debt of £10,000 on the new school buildings, and Lord Athlone added that the needs of medical education, combined with the requirements of medical treatment, render imperative the completion of the hospital in accordance with the original plan of providing 600 beds.

Royal Free Hospital Post-graduate Course

A week-end post-graduate course for former students of the London School of Medicine for Women will be held at the Royal Free Hospital from Dec. 8th to 10th. On Friday the lecturers will be Mr. J. D. McLaggan and Mr. W. G. Scott Brown (ear, nose, and throat lecture-demonstration), Miss Gertrude Dearnley (a gynæcological subject), Dr. Hazel Chodak Gregory (children's diseases), and Mr. C. A. Joll and Dr. Lucy Wills (recent work on thyroid cases with basal metabolic rate estimations). On Saturday they will be Mr. P. J. Verrall (an orthopædic lecture-demonstration), Dame Louise McIlroy (modern antenatal methods), Dr. Jenner Hoskin (heart cases), and Dr. Dorothy Hare (modern methods of investigation of indigestion). On Saturday members of the course are invited to tea in the new pathology unit, and afterwards Prof. R. A. Webb will lecture on supravital counts in clinical medicine. On Sunday morning there will be four lecture-demonstrations by Mr. L. E. C. Norbury (colostomy), Mr. C. E. Shattock (a surgical subject), Miss E. C. Lewis (a urological subject), and Miss G. M. Barry (a surgical subject). Applications to join the course should reach the warden and secretary of the medical school not later than Dec. 2nd.

British Empire Cancer Campaign

In the absence of Lord Reading, Sir Holburt Waring, P.R.C.S., presided at the quarterly meeting of the grand council held in London on Monday. A letter was read from the Duke of York, the president, commending the efforts being made to organise a financial appeal on Empire Day for the purpose of securing adequate funds for the campaign. Prof. E. Mellanby, F.R.S., who has succeeded the late Sir Walter Fletcher as secretary of the Medical Research Council, was elected a member of the grand council.

Prof. W. S. Lazarus-Barlow was elected to fill the remaining vacancy on the scientific advisory committee, and the appointment of Dr. R. G. Canti as hon. secretary to the scientific committees was confirmed. The newly constituted scientific advisory committee, whose members are nominated by the Royal Society, the Medical Research Council, and the Campaign, now consists of: Lord Horder (chairman), Prof. D. P. D. Wilkie (vice-chairman), Prof. J. C. Drummond, Dr. Mervyn Gordon, F.R.S., Prof. R. T. Leiper, F.R.S., Prof. J. C. G. Ledingham, F.R.S., Prof. E. L. Kennaway, Prof. J. M. Woodburn Morison, Prof. E. C. Dodds, and Prof. Lazarus-Barlow.

The following grants, totalling £14,380, were made: the Middlesex Hospital, £5400; the Cancer Hospital, £2700; St. Bartholomew's Hospital, £2250; St. Mark's Hospital, £540; the Marie Curie Hospital, £540; the radon centre at the Middlesex Hospital (through the Medical Research Council), £350; the Mount Vernon Hospital, £900; the Strangeways Research Laboratory, Cambridge, £350; the Westminster Hospital Annexe, £300; Mr. I. Hieger (at the Cancer Hospital), £550; Dr. P. R. Peacock (the Glasgow Royal Cancer Hospital), £300; and Dr. Alexander Haddow (at the University of Edinburgh), £200.

Essays on the Biological Effects and Mode of Action of Radiations upon Malignant and other Cells, for the 1933 Garton prize and medal, should reach the offices of the Campaign by Dec. 31st.

The late Dr. Richmond Leigh

The death is announced of Dr. Richmond Leigh, of Reitz, Orange Free State, who is said to have been the oldest member of the medical profession in South Africa. He died on Oct. 22, at the age of 91. Dr. Leigh qualified as M.R.C.S. from Liverpool in 1870, and was medical officer at St. George's Skin Hospital there in 1872 to 1898. During the South African War he served as a civil surgeon, and in 1903 he was appointed district surgeon of Reitz, holding this position until his retirement in 1923.

Municipal Hospitals

A new tuberculosis pavilion, which has cost £12,000, at Harts' Sanatorium, Woodford Green, was recently opened by the then Mayor of East Ham, Alderman G. H. Manser.—To Moor Park, New South Shields, the borough of Tynemouth has just added a new isolation block. It is a single-storey building with eight single-bed cubicles.

Queen Alexandra's Hospital for Officers

Lord Melchett presided at the fourteenth annual reunion dinner of this hospital on Friday, Nov. 10th, at the Criterion Restaurant, when a group of former patients and members of the nursing staff met at dinner. The chairmanship was appropriate, as Lord Melchett was a patient of the hospital on two occasions and his father built, equipped, and largely maintained the hospital for nearly five years at the suggestion of Mr. Herbert Paterson, hon. surgeon-in-charge. The work of the hospital during the war received special commendation from Sir Alfred Keogh. Lord Horder, who, until seconded for other duties, was physician to the hospital, was the guest of honour at the reunion, and referred wittily to his own surgical exploits and his reminiscences of his short period of duty at Queen Alexandra's Hospital. In proposing the toast of the Princess Victoria, from whom a telegram of good wishes was received during the evening, Lord Melchett spoke with optimism of the future of the Empire. Capt. W. L. D. Gibson responded to the toast of the former patients proposed by the chairman, and Dr. C. S. Williamson proposed the health of the Matron (Miss M. C. Sinzininex, R.R.C.) and the nursing staff, to which the Matron replied. Mr. Owen Roberts proposed the health of Mr. Paterson and Mrs. Paterson, who had served as Hon. Quartermaster to the hospital. That such gatherings should still be held is evidence of the lasting camaraderie which has followed the war.

Physiological Society

A meeting of this society will be held at the National Institute for Medical Research, Hampstead, London, N.W., at 3 P.M., on Saturday, Nov. 18th. There will be demonstrations of: the reactions of the tissues to dust from tarred roads, and the acclimatisation (?) of animals to 0·3 per cent. of carbon monoxide in inspired air (J. Argyll Campbell); perfusion of a sympathetic ganglion, and chemical transmission at synapses (W. Feldberg and J. H. Gaddum); a sensitive physical test for adrenaline (J. H. Gaddum and H. Schild); a convenient form of fluid electrode, and a forceps for passing deep ligatures (L. W. Collison); parabiotic rats and ferrets (R. T. Hill); and methods of approach in hypophysectomy (A. S. Parkes). From 4.45 P.M. onwards there will be discussions on the following printed communications: human electrocardiograms (P. Rijlant); the mechanisms of the nervous discharge of adrenaline (W. Feldberg, B. Minz, and J. Tsudzimura); and the nomenclature of fibres in the autonomic system and their effects (Sir Henry Dale). The subjects of other communications will include: the chemical transmitter of effects of the vagus nerve (Sir H. Dale); the chemical transmitter at synapses in a sympathetic ganglion (W. Feldberg and J. H. Gaddum); the relations between the action of the sympathetic and parasympathetic nerves of the stomach (J. S. Harrison and B. A. McSwiney); the effects of mechanical factors in water-diuresis in man (G. W. Theobald); the assay of ovulation-producing substances (A. S. Parkes); metabolic changes following adrenalectomy (O. Cope and others); and glycolytic formation of blood lactate (C. Lovatt Evans and others). The assistant hon. secretary may be addressed at the department of physiology, University College, Gower-street, W.C.1.

Devizes and District Hospital

This institution has become so inadequate that an appeal is being made for £21,000 for its modernisation and enlargement. The building, which was erected in 1870 and enlarged in 1887 and again in 1911, has no out-patients' department, and out-patients have to be attended to in the X ray room or the general wards. Accident cases also have to be dealt with in the general wards at whatever hour they may be admitted. Fracture cases sometimes have to be sent home after treatment, and other patients, it is stated, have frequently to be discharged prematurely although the eight-bed wards have on occasions to hold 10, 12, or even more patients. The sleeping accommodation for nurses and maids is so restricted that some have to sleep out, and some of those accommodated in the hospital have to share bedrooms with one, two, or even three, others. Night nurses have to write their notes in a passage. There is no isolation block, and it is impossible to improve the kitchen and other domestic accommodation. Ground immediately adjacent is now available, and it is proposed first to build new nurses' and kitchen quarters, and an out-patients' and accident department.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 21st.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship. 8 P.M., PATHOLOGY. Laboratory Meeting at University College Hospital, Gower-street, W.C. Meetings are open to contributors other than those working in the Laboratory where the meeting takes place. Those wishing to read papers should apply to the Hon. Secretary in the usual way.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Discussion: Louping-ill. Openers: Mr. W. S. Gordon, Mr. W. A. Pool, and Mr. I. A. Galloway. Other speakers will take part.

THURSDAY.—8.30 P.M., UROLOGY. Clinico-Pathological Meeting. Cases and specimens: Mr. A. Clifford Morson: (1) Drawing of a Hermaphrodite. Mr. Cuthbert Dukes: (2) Tuberculosis of Kidney. Mr. Alex. E. Roche: (3) Silent Renal Tuberculosis; (4) Atypical pyelograms of Polycystic Kidney. Dr. H. W. Parrott: Hydronephrotic Atrophy of Kidney following Amputation of Hip. Mr. E. W. Riches: (6) Pyelograms of Ureteral Obstruction due to Extramural Causes; (7) Case of Hypogonadism.

FRIDAY.—5 P.M., DISEASE IN CHILDREN. Cases and Specimens: Dr. Bernard Schlesinger: (1–2) Chronic Pyuria treated with Autogenous Vaccines. Dr. Hugh Lankester (by permission of Dr. W. T. Gordon Pugh): (3) Bilateral Tuberculous Epididymitis with Hydronephrosis. Dr. Norman B. Capon: (4) Renal Rickets with Calcification in the Kidneys. Dr. Stanley Rodgers: (5) Pyelonephritis with usual Failure-recovery. Dr. M. Bolton (for Dr. C. Alice King): (6) Precocious Puberty in a child of three. Dr. Donald Bateman (for Dr. Donald Paterson): (7) Renal Sarcoma of Infancy. Dr. Stanley Rodgers: (8) Congenital Heart-block. Dr. T. Skene Keith and Dr. S. A. Owen: (9) Double Ureterocele with Dilated Ureters and Early Hydronephrosis. Mr. O. L. Addison: (10) Lantern Slides of some Renal Abnormalities. Dr. W. T. Gordon Pugh: (11) Lantern Slides of Renal Calculi in Cases of Prolonged Recumbency. Other cases illustrating diseases and abnormalities of the urino-genital tract will be shown in addition to cases of general interest. Members of the Section of Urology are specially invited to attend the meeting and to show cases. 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Dr. J. D. Rolleston: The Small-pox Pandemic of 1870–71. (Presidential address.) Members of the History of Medicine Section are specially invited to attend the meeting.

HUNTERIAN SOCIETY.

MONDAY, Nov. 20th.—9 P.M. (at the Cutler's Hall, Warwick-lane, E.C.), a discussion on That Alcohol is of Value to the Citizen. Opened by Mr. P. J. Hannon, M.P., Dr. W. J. O'Donovan, M.P., Dr. J. D. Rolleston, and Mr. J. Hugh Edwards, J.P.

CHELSEA CLINICAL SOCIETY.

TUESDAY, Nov. 21st.—8.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.), Mr. Zachary Cope: The Simulation of Acute Abdominal Disease; preceded, at 7.15 P.M., by a dinner.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, St. John's Hospital, 19, Leicester-square, W.C.

WEDNESDAY, Nov. 22nd.—4.15 P.M., Dr. J. E. M. Wigley: Multiple Cystic Endotheliomata of the Skin.

NORTH-WEST LONDON MEDICAL SOCIETY.

TUESDAY, Nov. 21st.—9 P.M. (in the Regal Rooms, adjoining Café, Finchley-road, nr. Golders Green, N.W.), Dr. R. D. Lawrence: Simple Facts in the Treatment of Diabetes.

EDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.
Thursday, Nov. 23rd.—8.30 P.M., Sir John Collie: Workmen's Compensation—its Medical Aspect.

OCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, Russell-square, W.C.
Friday, Nov. 24th.—5 P.M., Discussion on Responsibility of the Local Authority Towards the Blind. To be opened by Dr. E. K. Macdonald, M.O.H., Stockport.

HILD STUDY SOCIETY, 29, Tavistock-square, W.C.
Thursday, Nov. 23rd.—6 P.M., Dr. Margaret F. Lowenfeld: Freedom and Discipline in Education.

HACKNEY MEDICAL SOCIETY.
Wednesday, Nov. 22nd.—9.30 P.M. (at the Royal Veterinary College, N.W.), Sir Frederick Hobday: Diseases Analogous in Animals and Man and their Comparative Aspect.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
Monday, Nov. 20th, to Saturday, Nov. 25th.—National Temperance Hospital, Hampstead-road, N.W. Evening M.R.C.P. Course. Tues. and Thurs. at 8 P.M.—Royal Waterloo Hospital, Waterloo-road, S.E. Course in Medicine, Surgery, and Gynæcology. All day.—London Lock Hospital, Dean-street, W. Course in Venereal Disease. Afternoons and evenings.—St. Mark's Hospital, City-road, E.C. Course in Proctology. All day.—British Red Cross Clinic, Peto-place, N.W. Course in Rheumatism. Tues. and Thurs. at 8 P.M.—Panel of Teachers. Individual clinics are available daily by arrangement with the Fellowship of Medicine. Courses, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.
Monday, Nov. 20th.—10 A.M., Medical Wards. Skin and Genito-urinary Clinics. 11 A.M., Surgical Wards. 2 P.M., Medical, Surgical, Eye and Gynæcological Clinics. Gynæcological Wards. 4.15 P.M., Lecture, Dr. Burnford: Febrile States.
Tuesday.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Medical, Surgical, and Throat Clinics. 4.15 P.M., Lecture, Mr. Green-Armytage: Contraception.
Wednesday.—10 A.M., Medical and Children's Wards. Children's Clinic. 2 P.M., Medical, Surgical, and Eye Clinics. 3.45 P.M., Venereal Diseases.
Thursday.—10 A.M., Neurological and Gynæcological Clinics. 11.30 A.M., Fracture Demonstration. 2 P.M., Medical, Surgical, Eye, and Genito-urinary Clinics. 4.15 P.M., Lecture, Dr. Burnford: Febrile States.
Friday.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Medical, Surgical, and Throat Clinics. 4.15 P.M., Lecture, Dr. Konstam: Syphilis of the Heart.
Saturday.—10 A.M., Medical and Surgical Wards, Children's and Surgical Clinics. The lectures at 4.15 P.M. are open to all medical practitioners without fee.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
Tuesday, Nov. 21st.—11.30 A.M., Pathological and Biochemical Demonstration.
Wednesday.—9.30 A.M., Skin Clinic. 2 P.M., Dental Clinic.
Thursday.—2 P.M., Tonsils, Adenoids, and Anæsthesia.
Saturday.—9.30 A.M., Eye Clinic.
Medical and Surgical Out-patient Clinics: daily from Monday to Saturday, 10 A.M. to 12 noon. Medical Wards: mornings, 10 A.M., Monday, Wednesday, Thursday, and Saturday; afternoons, 2 P.M., Monday, Tuesday, Thursday, and Friday. Surgical Wards: Tuesday, Thursday, Friday mornings, and Wednesday afternoon.

NATIONAL HOSPITAL, Queen-square, W.C.
Monday, Nov. 20th.—3.30 P.M., Dr. Kinnier Wilson: Disorders of Cerebral Function, Aphasia, Apraxia, &c.
Tuesday.—Dr. Denny-Brown: Conditioned Reflexes.
Wednesday.—Dr. Collier: Clinical Demonstration.
Thursday.—Dr. Walshe: The Motor System.
Friday.—Dr. Carmichael: The Vegetative Nervous System. Out-patient Clinic each day at 2 P.M.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.
Thursday, Nov. 23rd.—3 P.M., Dr. F. L. Golla will demonstrate.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
Wednesday, Nov. 22nd.—4.30 P.M., Mr. Kenneth Walker: Treatment of Bladder Growth. Illustrated by Cinema.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James Hospital, Ouseley-road, Balham, S.W.
Wednesday, Nov. 22nd.—4 P.M., Mr. J. P. Lockhart-Mummery: Incontinent Anus.

ROYAL INSTITUTE OF PUBLIC HEALTH, 23, Queen-square, W.C.
Wednesday, Nov. 22nd.—4 P.M., Rev. J. C. Pringle (Secretary, C.O.S.): Citizenship and Charity.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
Thursday, Nov. 23rd.—9 P.M., Mr. A. C. Palmer: Prolapse and the Prolapse Syndrome. (Dr. C. B. Heald's lecture has been postponed.)

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Chandos-street, W.C.
Sunday, Nov. 19th.—10.30 A.M., Dr. F. H. Young: Asthma. 11.45 P.M., Mr. A. O. Gray: Prenatal Care.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
Friday, Nov. 24th.—4 P.M., Mr. W. A. Mill: Earache in the Normal Ear.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
Tuesday, Nov. 21st.—5 P.M., Dr. H. W. Barber: Immunity and Anaphylaxis.
Thursday.—5 P.M., Dr. W. N. Goldsmith: Pigmentation of the Skin.

NATIONAL COUNCIL FOR MENTAL HYGIENE.
Wednesday, Nov. 22nd.—24th Mental Health Conference at the Caxton Hall, Westminster, S.W.
Saturday.—10.30 A.M., Special Session for Medical Magistrates.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL Post-graduate Lectures.
Wednesday, Nov. 22nd.—4 P.M., Mr. A. J. Gardham: Results of Radium Treatment of Growths of the Mouth and Pharynx.

CHADWICK PUBLIC LECTURES.
Tuesday, Nov. 21st.—8 P.M. (at the London School of Hygiene, Keppel-street, W.C.), Dr. Charles Porter: "Bossom Gift." Symposium. The One-pipe System of House Drainage in Theory and Practice.

LEEDS GENERAL INFIRMARY.
Tuesday, Nov. 21st.—4 P.M., Mr. R. Broomhead: Manipulation of Joints.

MANCHESTER ROYAL INFIRMARY.
Tuesday, Nov. 21st.—4.15 P.M., Mr. J. P. Buckley: Some Aspects in the Treatment of Hernia.
Friday.—4.15 P.M., Dr. F. E. Tylecote: Demonstration of Medical Cases.

ANCOATS HOSPITAL, Manchester.
Thursday, Nov. 23rd.—4.15 P.M., Dr. R. Ellis: Rheumatoid Arthritis.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate, Manchester.
Wednesday, Nov. 22nd.—4.30 P.M., Dr. Simon Kelly: Differential Diagnosis of Pulmonary Tuberculosis.

GLASGOW Post-graduate Lectures.
Tuesday, Nov. 21st.—3.30 P.M. (in the Faculty Hall, Vincent-street), Dr. S. J. Cameron: Recent Views on the Toxæmias of Pregnancy.
Wednesday.—4.15 P.M. (at the Royal Maternity and Women's Hospital), Prof. J. M. Munro Kerr: Obstetrical Cases.

Appointments

Black, Geo. W., M.B., B.S. Lond., F.R.C.S. Eng., has been appointed Hon. Ophthalmic Surgeon to the General Infirmary, Leeds.

Venters, Margaret, M.B., Ch.B. Edin., Resident Medical Officer, Isolation Hospital of Queen Charlotte's Maternity Hospital, Ravenscourt-square, Hammersmith.

Certifying Surgeons under the Factory and Workshop Acts: **Ferrie, A. McLaren**, M.B., Ch.B. Edin. (St. Helens); **Wright, A.**, M.B., Ch.B. Edin. (Portobello).

Births, Marriages, and Deaths

BIRTHS

Gwynne-Evans.—On Oct. 28th, at Ealing, the wife of Dr. E. Gwynne-Evans, of a daughter.

Montgomery.—On Nov. 11th, the wife of Dr. G. O. Montgomery, of South Park Hill-road, Croydon, of a son.

Pank.—On Nov. 3rd, at Gallwey House, Thornhill, Aldershot, the wife of Major P. E. D. Pank, R.A.M.C., of a son.

Saint.—On Oct. 31st, the wife of James H. Saint, M.D., F.R.C.S., of Newcastle-upon-Tyne, of a son.

MARRIAGES

Bennett—Rowles.—On Oct. 31st, at St. Botolph's Church, Chevening, Kent, Randle Bennett, M.R.C.S., L.R.C.P., to Dorothy Margaret, only daughter of the late F. L. Rowles and of Mrs. Rowles, of Riverhead, Sevenoaks.

Bloxsome—Bauld.—On Oct. 28th, at Cheltenham, Harold Bloxsome, M.R.C.S., L.R.C.P., of Fairford, Glos., to Helen, second daughter of Mr. and Mrs. W. Bauld, of Glencraig, Fife, and Dundee.

DEATHS

Pullar.—On Nov. 1st, at Upper Richmond-road, Richmond, Alfred Pullar, M.D., aged 88.

Steedman.—On Nov. 3rd, suddenly, at Stonehouse, Gloucester, Dr. Daniel Mackenzie Steedman, aged 85.

Sutherland.—On Nov. 6th, at Wellgate House, Newport, Fife, after a very short illness, Lewis Robertson Sutherland, M.B., C.M., Emeritus Professor of Pathology of St. Andrews University College, Dundee.

Young.—On Oct. 30th, suddenly, at Park-circus, Ayr, Alfred Alexander Young, M.B., Hon. Sheriff Substitute of Ayr.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

A MODEL PUBLIC MORTUARY

WELL-FOUNDED complaints have recently been made by pathologists in various parts of the country of the bad accommodation provided for the conduct of post-mortem examinations ordered by the coroner. Often no satisfactory post-mortem room is provided, or if provided, it is not fitted with an adequate supply of running water, is not properly lighted, heated, or ventilated, and the arrangements for storing the subjects are quite inadequate. It would serve no good purpose to detail the unpleasant conditions under which pathologists are expected to work by some local authorities, but it may be useful to show how greatly not only their convenience but the public welfare is served by the introduction of modern equipment into properly planned buildings. In the London district Battersea Public Mortuary is regarded as a model of its kind and it will be clear from the details set out below that it is especially well adapted to its purpose.

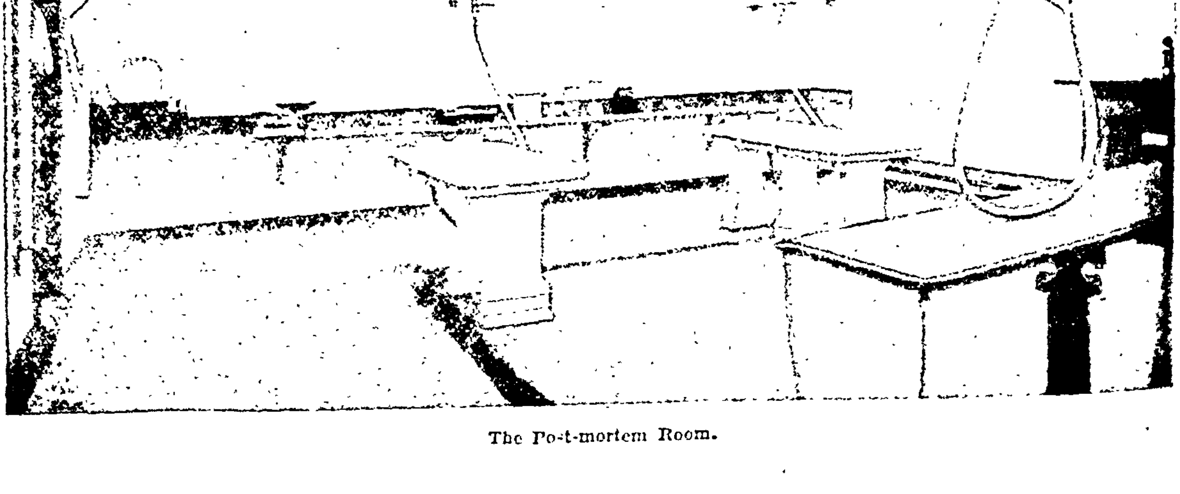
Battersea Public Mortuary was erected by the borough council in 1901. The buildings, which are conveniently situated around a courtyard, consist of a preparing room, post-mortem room, store room, and mortuaries. Except in the store room, where the walls are distempered and the floor is of concrete trowelled to an impervious surface, the walls are finished with opal glass tiles with angle pieces reaching from the sloping ceilings to the floor coving, and terrazzo floors are provided.

The *post-mortem room* measures 30 ft. by 24 ft., is extremely well lighted by day from the roof and by windows; artificial lighting is supplied in the form of 13 daylight blue electric lamps, so that the colour of the material under examination is well-defined. On the north side is a steam-heated tubed radiator extending the whole length of the room. Along one wall is a long marble bench to hold scales and instruments, and a sink of good design. The room contains three pedestal post-mortem tables, two of which are of white glazed earthenware, bevelled to two draining points, one on each side (instead of a central one which may be blocked by the body); 1½ in. non-corrosive metal waste pipes discharge into a white glazed channel covered with a suitable grating which empties into a gully outside. The third table is of slate and is to be replaced shortly by a table similar to the others but 3 ft. 2 in. instead of 2 ft. 9 in. in height. There is a hot and cold water service to the sink and to each table with an overhead mixing valve. The hot water is supplied by a 30-gallon thermostatic gas storage heater. A telephone extension is fitted to the post-mortem room and a dressing room with lavatory accommodation is available for the pathologist.

The mortuaries.—The larger of these measures 25 ft. by 19 ft., with top lighting, the side lights being fitted with glass louvres. The refrigerating plant, recently installed by Frigidaire, Ltd., extends the full width of the room and has accommodation for 18 bodies. The viewing room is placed between the two mortuaries, with plate glass partitions on each side in the walls separating it from the mortuaries. The viewing room also contains a glass-fronted cabinet used for the purpose of identification of clothing.

The smaller mortuary is 18 ft. long by 12 ft. wide. On the south side facing the viewing room are eight catacombs which are at present used for the storage of zinc-lined shells.

The *refrigerator* has two compartments, the larger holding 12 bodies in tiers of 3 and the smaller 6 bodies, the temperature being maintained automatically at 34° and 20° F., respectively. The compartments can be cooled separately or together, since the controls are separate. No skilled operator is needed to work the plant. A special device is fitted to enable the coils within the refrigerator to be defrosted without appreciable loss of temperature. The running costs are estimated to average 6*d*. per day. It will be noticed from the illustration that the plant occupies the minimum of floor space and that the compressor unit and controls are on the roof of the cabinet; this reduces the risk of possible interference. The body racks and trays, supplied by Messrs. James Gibbons, Ltd., are made of steel, the trays being finished in stove-enamelled aluminium with a coat of cellulose clear lacquer from which blood stains are easily removed. On the underside of the trays, skids or runners are fixed which engage with the grooves provided in the ball-bearing rollers and enable a loaded tray to be drawn out with ease; the rollers are easily removable as are certain cross members of the



The Post-mortem Room.

cks, this affording easy cess to the interior. (These cks are made to conform ith any make of refrigerat- g chamber; they have been pplied to the City of estminster mortuary where e refrigeration is executed y Messrs. Kelvinator, Ltd.) he monolithic floor has a itable covering and there is tray drain in each com- artment into which the aste from the drip trays lso discharges when defrost- g is going on.

ADVANTAGES OF REFRIGERATION

The advantages of an dequate refrigeration lant need hardly be emhasised. In its absence odies deposited for postmortem examination are ften placed on tables in he post-mortem room some ime before the examinaion takes place. During he summer months putre- action may advance apidly during this period, nd the presence of the low-fly in large numbers is only the most obvious f many unpleasant conditions that may arise. t is often necessary, moreover, for bodies to be kept r several days before the inquest is held and in he absence of refrigeration the relatives are compelled o go through the ordeal of identifying a decomposed ody. Where bodies can be placed in the refrigerator ntil the time of the post-mortem examination nd again when this is completed, they can be removed rom the mortuary in the same state of preservation s when deposited.

In the event of a delayed burial, the body is placed n a temperature of 34° F. until the post-mortem xamination is done, after which it can be kept in a till colder compartment, at a temperature of 20° F., or an indefinite period without the development of urther putrefactive changes. This is obviously an mportant consideration in medico-legal work and for dentification purposes.

The Refrigerator (Frigidaire type).

VENTILATION

The only aspect of this mortuary which is not as et completely satisfactory is its ventilation. Whilst the post-mortem room is excellently lighted by lantern light fitted with opening sashes, these do not provide sufficient ventilation to prevent the room from becoming uncomfortably hot and stuffy during the summer months. Proposals are under consideration for the installation of mechanical means of improving the ventilation, and it is anticipated that these additions will be provided early in the new year.

The Battersea borough council deserve congratulation on the efforts they are making to introduce the most modern equipment in their public mortuary and to arrange for its orderly and seemly maintenance.

THE CENTRAL OPIUM BOARD

THE report to the Council of the League of Nations of the Permanent Central Opium Board, to which reference was made in our issue of Oct. 7th (p. 818), is now obtainable from the League's Publication Department (40, Museum-street, London, W.C.1.), price 4s. It includes, besides the annual report of the Board for the year 1932, statistical returns and graphs showing the distribution of raw opium, morphine, heroin, and cocaine in various countries supplied in virtue of the Opium Convention of 1925. The imports, exports, stocks, manufacture, conversion, and consumption of the same drugs in manufacturing countries are dealt with, as also are the seizures of illicit commerce effected in the year 1932. While some countries, parties to the Opium Conventions, have failed to furnish returns, it appears that a total manufacture of 25,319 kg. morphine was recorded in 1932. Of this amount 1070 kg. were used in the manufacture of heroin, while 16,866 kg. were utilised for preparing substances which are not at present covered by the terms of the Convention of 1925. The total production of cocaine returned in 1932 amounted to 3973 kg., rather less than in each of the three previous years; whereas more of this alkaloid was manufactured last year in Great Britain, Netherlands, and Switzerland, the production in Germany, the United States, France, and Japan was less than in 1931.

The report which, with annexes, runs to 122 pages, is well worthy of study by those who desire to learn the efforts which have been, and are being, made through the League of Nations to restrict the use of dangerous narcotic drugs to the requirements of medicine and science.

THE NEW OBJECTIVE OF MEDICAL M[illegible]ONS

IN an attractive booklet of 88 page [illegible] tled
"Hospitals Overseas." just issued by th [illegible]
Missionary Society (Salisbury-square, Londo [illegible]
a list is given of 68 hospitals for which th [illegible]
is responsible in different parts of Africa a [illegible]
The first aim of the medical mission, [illegible]
Moorshead says, is to set an object lesso [illegible]
community should care for its sick and [illegible]
and the missionary's first thought is ho [illegible]
the physical need which stares him in the [illegible]
contacts of daily life. But in a chapt [illegible]
"Building for the Future," Sir Albert Co [illegible]
that the Mengo hospital in Uganda has n [illegible]
the acme of its prosperity as a missionary [illegible]
and he asks whether by any conceivable [illegible]
imagination English doctors and nurses alo [illegible]
more than touch the fringe of physical [illegible]
population of three million people, or teach m [illegible]
a tiny fragment of them the great lessons of pr [illegible]
medicine. Henceforward, he says, the aim n [illegible]
to train native Africans to help their own co [illegible]
men; and in 1917 a medical scho [illegible] was opene [illegible]
the C.M.S. in the protectorate, bu [illegible] this was taken
over in 1924 by the Government, which now trains candidates up to the Indian sub-assistant surgeon standard. The mission then started to train the

better-educated Baganda women in maternity and child welfare work, for the deaths under twelve months of age in the protectorate amounted in 1920 to a rate of 330 per thousand live births. The training school was completed in 1921, and 111 students have now passed the qualifying examination of the Uganda Midwives Board and are working at thirty scattered country centres. Two years ago was opened a training college designed to give African girls a three years' training in sick nursing, after which most of them go on to train in maternity. Sir Albert Cook feels that in these efforts the medical missions are helping to develop overseas a new conception of women's capabilities and of the place of the trained woman in the progress of society.

SLUMS AND GARDEN CITIES

"It seems to me that pauperism is not an affair so much of wages as of dwellings. If the working classes were properly housed at their present rate of wages they would be richer. They would be healthier and happier at the same cost."

Dr. R. O. Moon quoted this saying from Disraeli's "Lothair" in his Malcolm Morris memorial lecture, delivered in London last Tuesday.

Since 1919, he said, one and three-quarter million houses of the smaller type have been built, and now nearly 8,000,000 people are living in new houses. In spite of this, however, the slums have not been emptied; in fact not more than 75,000 people have been cleared out of insanitary slums. They are said to be as full as ever and in worse condition than in 1914. The evils of these slums have arisen largely because modern towns have developed without any plan; there was no reason for this great congestion of the modern town, with factories crowded together and factory workers huddled into miserable and squalid dwellings.

Town-planning Dr. Moon defined as the art and science of arranging beforehand for the extension of towns and the protection of the country. "It aims at preventing ugliness and preserving beauty; it aims at preventing disease and therefore promoting health. It is, one might say, the application to social conditions of the principles of preventive medicine." But even the town-planning measures now available will not, in Dr. Moon's opinion, be sufficient in themselves to prevent the recurrence of slums. The best remedy is to remove some of the inhabitants of over-populated towns and build towns de novo to receive them. Such a new town should be surrounded by an agricultural belt which can never be built upon, and [illegible] not only develop its own life, engender its own [illegible]ture, nurture its own tradition, but also be [illegible]ll self-contained town, provided with all the [illegible] for fuller life that modern civilisation has [illegible] us. This idea is the origin of the garden [illegible] which there are now two—Letchworth and

[illegible]uld not be unnatural, Dr. Moon said, to [illegible]e that in garden cities the diminution of [illegible]ng, the limiting of the number of houses [illegible]e greater amount of open spaces, and the [illegible]he workers, after the day's work is done, [illegible] stroll into the country, would tend to the [illegible]rovement of health; and, as a matter of [illegible]erience, Letchworth, with a population of [illegible]00 had, in the year 1930, when the death-[illegible]ngland and Wales was 11·4, a rate of 6·7. [illegible] the infant mortality per 1000 births in [illegible]nd Wales was 60, for Letchworth it was [illegible] In Welwyn, which has a population of not [illegible]n 7000, the death-rate is as low as 5·66 and [illegible]t mortality-rate is 20·19.

[illegible]CAL JOURNAL AND RECORD.—This old-estab- journal has changed hands recently. Dr. [illegible] Stragi[illegible] who has been its editor for many becomes [illegible]roprietor, and the journal is now [illegible]ed from [illegible]10, Washington-street, New York. The paper was amalgamated with the New [illegible] Journal some 20 years ago.

Vacancies

For further information refer to the advertisement col

All Saints' Hospital for Genito-Urinary Diseases, A[illegible] West-square, S.E.—Res. H.S. At rate of £100
Bedford County Hospital.—Second H.S. At rate of £1[illegible]
Belfast Joint Nursing and Midwives' Council.—Examin[illegible] Midwives.
Belgrave Hospital for Children, Clapham-road, S.W. Physician. 50 gns.
Birmingham Children's Hospital.—Cas. O. £350.
Bolton Royal Infirmary.—Three H.S.'s. Each £125.
Bristol University.—Chair of Anatomy.
Chelmsford Borough.—Specialist Consultant. 3 gns. [illegible] sultation.
Chelsea Hospital for Women, Arthur-street, S.W.—Ju[illegible] At rate of £100.
Chester Royal Infirmary.—H.P. £150.
Dewsbury and District General Hospital.—Sen. H.S., [illegible] H.S. £200 and £150 respectively.
Elizabeth Garrett Anderson Hospital, Euston-road [illegible] Obstetric Asst., and Three H.S.'s. Each at rate [illegible]
Essex County Council.—Asst. County M.O. and Deputy [illegible] £700.
Exeter Royal Devon and Exeter Hospital.—Hon. M.O. to [illegible]logical and Electrical Dept.
Gloucester, Gloucestershire Royal Infirmary, &c.—Two [illegible] Each at rate of £150.
Great Yarmouth General Hospital.—[illegible] £140.
Guildford, & [illegible] £800.
Hampstead [illegible]—Two Con[illegible] ricians.
Haslemere and District Hospital.—Res. M.O. At rate [illegible]
Home Office, Whitehall, S.W.—Med. Inspector of [illegible] £726.
Hospital for Epilepsy and Paralysis, Maida Vale, W. [illegible] Psychiatrist. Also Two Med. Regs. Each £100.
Hove General Hospital.—Two District M.O.'s.
Hull Royal Infirmary.—Cas. O. and Third H.S. Each at [illegible] £150.
Ilford, King George Hospital.—Res. M.O. £250.
King Edward VII. Sanatorium, Midhurst.—First Asst [illegible] £450.
Kingston-upon-Thames, County Sanatorium, Milford.—[illegible] Asst. M.O. At rate of £250.
Lambeth Hospital, Brook-street, Kennington.—Res. Med[illegible] £1400.
Liverpool, Smithdown-road Hospital.—Res. Asst. M.O. [illegible]
Liverpool, Women's Hospital, Catharine-street.—H.[illegible] rate of £100.
London County Council.—Temporary District M.O. [illegible] Also Two Divisional M.O.'s. Each £800.
Manchester, Ancoats Hospital.—Res. M.O. £200. Surg[illegible] trars.
Manchester Babies' Hospital, Burnage-lane, Levenshulme [illegible] Res. M.O. At rate of £50.
Miller General Hospital, Greenwich-road, S.E.—Cas. O[illegible] Out-patient Officer. Each at rate of £150. Also [illegible] and H.P. Each at rate of £100.
Newcastle-upon-Tyne, City Hospital for Infectious Dise[illegible] Res. Med. Asst. £350.
Northampton General Hospital.—H.S. and Cas. O. At r[illegible] £150 and £120 respectively.
Oldham Royal Infirmary.—H.S. At rate of £175.
Poole, Dorset, Cornelia and East Dorset Hospital.—Hon. Anæsthetist.
Princess Beatrice Hospital, Richmond-road, S.W.—Res. [illegible] At rate of £110.
Queen Charlotte's Maternity Hospital, Marylebone-road, N[illegible] Third M.O. for Antenatal Dept.
Queen Mary's Hospital for the East End, E.—Hon. Asst. [illegible]logist. Also Dental Anæsthetist. £25. Also Re[illegible] £200. And Cas. O. At rate of £150. Also H.S.'s, H.P.'s, &c. Each at rate of £120.
Queen's Hospital for Children, Hackney-road, E.—H.P. [illegible] Cas. O. Each at rate of £100.
Reading, Royal Berkshire Hospital.—Res. Anæsthetist. [illegible]
Royal Free Hospital, &c., Gray's Inn-road, W.C.—Bacterio[illegible] and Lecturer in Bacteriology. £500. Also Surg. Reg. [illegible] Also Gynæcological Reg. and Med. Reg. Each [illegible] Also H.P.'s, H.S.'s, &c.
Royal National Ophthalmic Hospital, 234, Gt. Portland-stree[illegible] Hon. Gynæcologist.
Royal Society of London, Burlington House, W.—Foul[illegible] Research Studentship. £700.
Royal Waterloo Hospital for Children and Women, Waterloo[illegible] S.E. H.S. At rate of £100.
St. George's Hospital, S.W.—Psychiatrist. Also Asst. Phy[illegible] Skin Dept.
St. Mary's Hospital, W.—Cas. H.S. At rate of £100.
Salford, Infectious Diseases Hospital.—Jun. Asst. Res. [illegible] £200.
South London [illegible] Clapham Common, S. [illegible] H.P., and [illegible] 100.
Stoke-on-Trent [illegible] Each £[illegible]
Surrey County [illegible] O. £350.
Wells Mental [illegible] W.—H.P. and [illegible]
West London [illegible] H.S.'s. Each at rate of £100.
Willesden Municipal (Fever) Hospital, Brentfield-road, N.[illegible] Res. M.O. £250.
Windsor, King Edward VII. Hospital.—Two [illegible] at rate of £100.